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AMERICAN VETERINARY REVIEW

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AMERICAN VETERINARY REVIEW.


OCTOBER, 1914.

EDITORIAL.

Daniel Elmer Salmon

When Dr. D. E. Salmon (as he was familiarly known) died in Butte, Montana, on August 30, 1914, the American veterinary profession lost one of its most brilliant members, and the REVIEW a valued and highly esteemed collaborator. Dr. Salmon had not yet reached the age when we may expect men to drop out of our ranks, he was only sixty-four years old, and we had every reason to expect to have him with us another ten years at least; but an attack of pneumonia cut short the career of this good and gifted man. Every veterinarian in America, and many in foreign lands, knew Dr. Salmon either personally or by reputation, and an outline of his life and his work appears in another place in this issue, so we will not go into that here. Those of us whose privilege it was to have known him well will always cherish the memory of the man, aside from the greatness of his achievements. Whether one met him in the capacity of Chief of the Bureau of Animal Industry, as President of the American Veterinary Medical Association or in a social way, there was always that genial manner, that aimable countenance, that generous simplicity and modesty of bearing that is typical of all truly great men, and that the highest honors that the profession could bestow upon him did not alter. He was always ready to do his part at public gatherings, and many there are who will recall an extemporaneous address that he made at the last A. V. M. A. banquet from which ladies were

excluded. It was at Atlantic City, N. J., in 1901. The ladies sat on the veranda outside of the dining hall, while the men banqueted, and later listened to the after-dinner speakers. His work in organizing a veterinary school at Montevideo, after leaving the service of the U. S. government, was among his achievements, the extent of which has possibly never been fully appreciated by the great majority. But he has been called away from us to a higher and greater life, and we are left to reflect and to try and realize all that he was to us, and what he meant to our profession while he was here. At the funeral services in Washington, D. C., many officials of the Bureau of Animal Industry were present; among others Dr. John R. Mohler, assistant chief; Drs. R. W. Hickman and A. M. Farrington; also Dr. L. O. Howard, Chief of the Bureau of Entomology, and Drs. C. J. Marshall and W. Horace Hoskins, of the University of Pennsylvania Veterinary School. Dr. Hoskins made an address at the bier.* The pall bearers were Drs. L. O. Howard, C. J. Marshall, John R. Mohler, A. M. Farrington, C. J. Hunt and Mr. Harry Blake.



EUROPEAN CHRONICLES.

AMONG NEW BOOKS.—*Atlas der Anatomie des Pferdes* (Atlas of Anatomy of the Horse), by Dr. Med. Vet. Reinhold Schmaltz, Professor of Anatomy to the Veterinary High School of Berlin.

Several years ago, on two occasions, I have had the pleasure to call the attention of my American confrères to the two first parts of this magnificent work, edited by the House von Richard Schwetz of Berlin.

To-day I have before me the third part of this masterly undertaking. Of the manner in which this is presented I have little to say, as it would be but the repetition of my previous examina-

* Published on page 95 of this issue.

tions. And yet how could I ignore the neatness, the fine printing and, above all, the beautiful illustrations which form the principal base of the work—I say the principal, for they are so perfectly and, I dare say, so correctly done that no other work can compare with it. Of course there are other excellent and beautifully illustrated works on anatomy, but the atlas of Professor Schmaltz differs from them, as by the plates alone one can almost study the anatomy of a region, of an organ, without the need of a long and sometimes hard and dry description.

Indeed if one glances at one plate, finely drawn and colored, and lays over it the double, made on transparent paper with the name of the minute parts shown by the colored illustration, there is no need for more description. Careful study and reading of the two plates, resting one on the other, are more than sufficient.

By that can be appreciated the value of the atlas for the practitioner and for the student desirous of refreshing their minds at a glance. After all, seeing these is but another reading, almost another dissecting.

This third part of Schmaltz's Atlas begins by a preface where the plan of the book is laid out and is followed by a concise description of the contents, the description of the viscera, viz., the Pectoral, the Abdominal and the Pelvic. This description, as I said, is concise; it takes a little over 11 pages. And now come the plates—each is colored, each has its transparent duplicate with the various names of muscles, blood vessels, organs, etc. Continuation of the previous parts, these plates are numbered from 63 to the end 78—and to make the reading easier they are marked on the top with the word “links—von hinten gesehen—rechts” (left—viewed from behind—right). The twelve first plates are views of the body, cut in sections. The remaining are views of the trunk as a whole.

* * *

Let us glance at the sections and their contents.

The *first section* is made through the neck, passing through

the middle of the second dorsal vertebra and showing the aspect of the entrance of the chest, a space bound above by the vertebrae, laterally by the first ribs which are seen and below by the anterior manubrium sterni. In that space is seen the longus colli, the trachea, oesophagus, the blood vessels and on each side a very small portion of the lungs. All is surrounded by the cervical muscles above, laterally and below with the pectorals.

The *second section* is made by the third dorsal vertebra. It is getting more in the thorax and the lungs appear by their anterior extremity resting upon each other. Then the trachea and the oesophagus are indicated. Of course the surrounding structures are different from those in the first. There is a longitudinal section of the scapula, and the cervical, scapular and pectoral muscles with blood vessels and nerves are indicated.

The *third section* is made back of this, through the sixth dorsal. We are almost in the anterior half of the thoracic cavity, and the lungs are separated inferiorly by the mediastinum and leave room for the heart and its envelopes.

The *fourth section* passing through the eighth dorsal vertebra goes further in the appearance of the lungs and heart. It is the middle of the thoracic cavity.

In the *fifth section*, made by the tenth dorsal, we are at the limit of both splanchnic cavities. In the upper part we find the posterior part of the lungs and in the lower the liver and the stomach. The phrenic portion of the diaphragm separates these parts.

We then reach the *sixth section*, which is passing through the thirteenth dorsal, showing a smaller portion of the lungs above and in the larger part of the plate, below, the stomach and various folds of the intestine.

The *seventh section*, through the fifteenth and sixteenth dorsal, the very posterior border of the lungs, occupies a small portion above and the digestive canals in its various divisions below.

The *eighth section* is by the eighteenth dorsal, the abdominal organs are exposed in full, also the kidneys and the spleen.

The *ninth section*, passing through the second lumbar, and

the *tenth* through the fifth, complete the anatomy of the abdomen.

The *eleventh* section made about the third sacral and the *twelfth* by the middle of the obdurator foramen show the final portion of the intestine, the rectum and the pelvic cavity with its contents.

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Plates 75 and 76 are united and give a splendid view of the profile of the left side of the trunk, with a portion of the lung, the position of the heart, the diaphragm, the liver, stomach, spleen, left kidney, fold of the large colon and small intestine.

Again, plates 77 and 78 are used to give a full view of the profile of the entire right side. It shows the divided portion of the anterior part of the lungs, with the heart, the blood vessels, the diaphragmatic septum, liver, right kidney, large colon, coecum and small colon.

I have taken much room and given much space to the consideration of this part of Schmaltz's Atlas. Long as this notice may seem, I feel that it cannot give the impression that I think it deserves, viz., that it is a most valuable monument to the anatomy of the horse and one that every veterinarian, student and practitioner, ought to always regard as *the* book for superior information.

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PROCEEDINGS OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION, 1913.—An enormous volume of nearly 1,100 pages with several illustrations has been issued by the Publication Committee of the Association, with Dr. J. R. Mohler, chairman.

Is it worth while, I asked myself when I received this handsome evidence of the greatness of the meeting of New York in 1913, is it worth while to review it? Every veterinarian in the United States has a copy, every member, active or correspondent or honorary, has received it; then of what use will it be for me to review it? And besides could I do it justice in the presence

of the enormous material that the volume contains? Perhaps I could not, and yet can the REVIEW let it go, can European Chronicle that has received it ignore it? No, I will try to do it justice in as concise terms as the space allowed me permits.

Proceedings, I think for the benefit of those who will read them, can be divided into several chapters.

A first containing the usual material found in the reports of similar events, viz., the various addresses and the answers that followed.

As the A. V. M. A. is a working organization, time with her is precious, and wasting it is not allowed. On that account we enter at once in the hearing of the various reports. First that of the ordinary officers of the Association and second those of the various committees, that on Diseases, on Intelligence and Education, those of the Resident Secretaries, on Legislation, Publication, etc., etc.

The report of the Committee on Revision of Veterinary Anatomical Nomenclature with its "Nomina Anatomica Veterinaria" exhibits the enormous amount of work that the Committee has done. And this report is not complete. Another year will be necessary to make it.

The report of the Committee on Reorganization is also an important one and is as yet before the Executive Committee I think. It has called for supplemental reports which show the great interest that the members of the Association take in this subject. The Constitution and By-Laws of years gone by, even with the amendments that were brought to them, can no longer serve for an organization, so large, so important as the A. V. M. A. is to-day.

And with a few more reports of Committees on specific subjects, I think, we can close the first chapter.

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Now we are entering in the active work of the Association. This second part presents, in detail, the work carried out at the various sittings.

Section on Veterinary Medicine forms the second chapter of *Proceedings* and presents papers on general questions of Physiology, of Therapeutics. There are but few papers on practical medicine proper, such as on Parenchymatous Mastitis, Cerebro-Spinal Meningitis of Horses, Forage Poisoning or Equine Encephalomyelitis, etc. One must not think that this chapter is not interesting, if it is not as complete as one would think it ought to have been.

What I call a third chapter is the *Section on Surgery*. There we will find papers from men that we all know and on subjects which are familiar to all of us, for instance, on Hernia, on Abdominal Surgery of Canines and Felines, on Lameness, on the Surgical Treatment of Colics, on Roaring. An interesting paper from Prof. Hobday of England is also presented.

The *Section of Sanitary Science and Police* occupies a great portion of the contents of *Proceedings*. Glanders, Biologic Diagnosis, Hog Cholera, Controlling of Chicken Pox, Sore Head or Contagious Epithelioma, Immunity against Tuberculosis, Meat Inspection, Dairy Sanitation, etc., etc. The section has plenty of work on hand, as the subjects under its head are so important and numerous.

The final section is that of the *Association of Veterinary Faculties and Examining Boards*. The papers that belong to it were few, but how full they were of good consideration and valuable remarks and wise suggestions.

The work of the Assembly is closed with all that concise consideration and *Proceedings* are completed by the relation of the social features, Pathological Exhibit, list of attendants, of members, etc., etc.

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And now I have concluded my review of the book. It was not expected that I should go more minutely into this notice; my perusal of it has told me of the impossibility of realizing a more complete examination. If I have stimulated the members who have received *Proceedings* to go into a minute and careful

reading, by which they could not only refresh their minds on the papers they had heard, but also bring back to them the pleasant hours that they passed in those few days of the celebration of the fiftieth anniversary, I will be satisfied in having done it!

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OCULAR REACTION BY TUBERCULINE INSTILLATION.—As I was about reading the concise article of the Bureau of Animal Industry on the ophthalmic test for glanders, my attention was called to the résumé of a communication of Prof. J. T. Heymann, of the University of Ghent, which treats of the reaction by repeated instillation of concentrated tuberculine as a means of diagnosing. The author undertook a systematic study of the question so as to find out a means of diagnosis, as true, harmless and practical as the cuti-reaction and which could take the place of the cutaneous injection of tuberculine.

To that effect he used brute-tuberculine, which with a special count-drop tube, made for the purpose, he introduced drop by drop into the eye—by a method similar to that used with malleine.

The normal condition of the eye being recognized, and it being well cleaned, “the left hand of the operator raises the upper eyelid and leaves two or three drops of the tuberculine fall on the external angle of the eye, which is then submitted to a slight massage, while at the same time pressure is applied on the lachrymal canal. The eye is then opened again, the count-drop tube is introduced under the upper eyelid in the supero-external conjunctival angle and two or three drops of tuberculine are allowed to drop in. The same is done again with the external angle of the inferior conjunctival cul-de-sac and again two or three drops of tuberculine introduced. The eye is then closed and submitted to massage a third and last time.

This first instillation is made in the morning and the reaction that follows lasts about 10 hours. A second instillation can be made four hours after unless the reaction of the first is perfectly positive. The effects are as follows: Flow of tears, red-

ness of the eye, mucus, mucopus, pus, swelling of the eyelids and conjunctiva. These manifestations are readily apparent when both eyes are compared, the one which is tuberculined and the other. The aspect of the discharge may vary in quantity and in coloration, but as soon as it is clearly yellowish or purulent, the reaction is positive.

Prof. Heyman gives long advice to veterinarians who would apply the test and feels so satisfied of the superior advantages of his method that he resumes them in positive conclusions, viz.:

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1. The characteristic suppuration produced by the repeated instillation of brute tuberculine appears on an average after about 3 to 10 hours, it is specific of tuberculous infection.

2. In animals free from the disease, the instillation does not promote suppuration; there is practically no ocular reaction in 95 to 97 per cent., a more abundant mucous secretion is only observed in 3 to 5 per cent. of the cases.

3. With tuberculous animals not accustomed to tuberculine the oculo-reaction is surely positive in about 95 per cent., doubtful in 3 per cent. and entirely negative in 1 or 2 per cent. only. It is therefore more true than the thermo reaction.

4. In tuberculous animals, accustomed to tuberculine by previous, old or recent in action, the positiveness of the oculo-reaction goes beyond 10 or 20 per cent. above that of the thermo reaction.

5. In animals with temperature normally high, in those that have a temperature of fever by tuberculous injection or other that cannot be tuberculined by injection, the oculo-reaction gives results which are as correct as in animals which have a normal temperature.

6. With animals with tuberculosis beginning, the oculo-reaction will reveal the tuberculous infection sooner and more surely than the thermo reaction, specially if the beginning infection is accompanied with fever.

7. Intercurrent ocular suppuration likely to resemble the

specific suppuration is almost never observed, while inter-current febrile manifestations, not specific, are quite frequent; hence the positive errors of the oculo-reaction will be also much more rare than those of the thermo-reaction.

8. Oculo reaction is much less harmful than the injection.

9. Instillation of tuberculine in the eye does not promote permanent lesion of that organ.

10. The operation is much more practical as it can be performed in less than 12 hours. From 100 to 300 animals can be easily examined in one day if properly stabled.

11. Ocular suppuration lasting for several hours is seen by the owner, who is easily convinced of the condition of his animal.

12. The operation can be repeated on the same eye or on the other in cases of doubtful reaction or also of positive. It can be renewed immediately or later to confirm the diagnosis.

13. As it can be made at will it permits lasting and better control.

14. On account of all those advantages it deserves to become the method of choice.

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EXPERIMENTAL PULMONARY TUBERCULOUS REINFECTION.
—In other words the bacteriologic concept of the tuberculous soil has been the subject of a series of experiments that were made by Doctor Bezançon and de Serbonnes which were reported lately in the *Presse Medicale*.

The inoculation of bacilli of human tuberculosis in the dose of 1 to 2 milligrammes, made in the trachea of a healthy guinea pig, gives rise to a tuberculous broncho-pneumonia, rapidly arriving to massive caseification; the inoculated bacilli are found in considerable quantity in the alveoli, where are found lesions similar to those found in caseous pneumonia.

By opposition, if bacilli are injected by the same way and in the same dose, not to fresh healthy guinea pigs, but to some already tuberculous, in having received several weeks previous

a virulent subcutaneous inoculation of bacilli and showing already, on account of the beginning of the generalization of the infection to the lungs, small tuberculous granulations in those organs, entirely different lesions are observed; the very day of the reinfection there occur allergic phenomenas, characterized by a great congestion of the alveolar capillaries and clinically by a great dyspnea, likely to promote death. This, however, most often does not occur, the animals resist, dyspnea subsides and the subject will survive much longer than the fresh guinea pigs controls, in oculated in the trachea. The guinea pigs, submitted to reinfection, do not indeed have caseous bronchopneumonia, but catarrhal alveolitis which ends in diffuse interstitial sclerosis with changes in the endothelium; the bacilli not multiplying are difficult to color in the alveoli.

Those experiments bring a favorable contribution to the doctrine, which claims that, for at least in a great part, what is called a tuberculous soil is a state of bacteriologic order, related, according to the organism is sensitive or refractory, to the absence of any anterior vaccination or on the contrary with the development of a relative immunity by a slight previous infection.

These results confirm the opinion of Metchnikoff and Burnett, of Calmette, who have shown the rapid progress of tuberculosis and the frequency of the massive caseous lesions in people, indemn until then of all tuberculous infection; by opposition to the slow evolution and the predominance of the fibrous forms found in civilized people, exposed since their infancy to slight contagions.

They also help us to understand the fact, apparently paradoxical, of the long resistance that tuberculous individuals present, against oculo reinfection, to which they are constantly exposed as soon as they are carriers of open lesions and perhaps also the disproportion, which exists between the extreme sensibility of the young child to a first tuberculous contagion and the lack of receptivity of the adult to new contagions.

Finally, they show that the state of resistance does not only

offer advantages, but that the state of hypersensibility that follows is not without any danger; the possibility of the apparition, at the very moment of the reinfection, of sudden accidents, susceptible, as demonstrated lately by Rist and Kindberg for the kidney, to explain some cases of unexpected death, observed in the course of a chronic pulmonary tuberculosis.

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BIBLIOGRAPHIC ITEMS.—*Bureau of Animal Industry. Bighead in sheep*, by H. J. Frederick, D.V.S.—Utah Agricultural Experiment Station. Circular No. 76. *Laboratory and Field Assay of Arsenical Dipping Fluids*, by Robert M. Chapin, Biochemic Division. Quarterly Bulletin, Chicago Veterinary College, March 14, 1914. *Comparative Medicine*, by W. H. Dalrymple, M.R.C.V.S. *Investigations in the Sero-diagnostic of Glanders in the Dutch Indies*, by Dr. C. Bubberman, from the report to the Agricultural Department. Agricultural Journal of the Union of South Africa, May, 1914. *Digestibility and Decomposibility of Bob Veal*, by Prof. Fish, of Cornell State Veterinary College. *Stock Feeding*, by W. H. Dalrymple, M.R.C.V.S. A. L.

AN ARRAY OF FACTS ABOUT THE ARMY VETERINARY SERVICE BILL (H. R. 4541) AND A LAST WORD.

1. May 1, 1913. The bill was introduced into the House by Mr. James Hay, of Virginia, chairman of the House Committee on Military Affairs, and he sent it to the War Department for comment.

2. June, 1913. The War Department, after due consideration by the Secretary of War, the Chief of Staff, the Quartermaster General and the Surgeon General, returned the bill to Mr. Hay with its complete endorsement.

3. February 4, 1914. A hearing of our professional representatives was had on the bill, and on that date the measure

(H. R. 4541) passed the House Committee on Military Affairs unanimously—which finished the first reading.

4. February 5, 1914. The same bill that passed the House Military Committee was introduced into the Senate by Mr. Kern, leader of the Democrats.

5. Two hearings were had before the sub-committee of the Senate Committee on Military Affairs (chairman, Senator Luke Lea, of Tennessee), and in the early part of June, 1914, a favorable report was made by that sub-committee to the Senate Military Committee as a whole.

6. June 26, 1914. The bill passed the whole Senate Committee on Military Affairs and was recommended for passage on the floor of the Senate.

7. June 29, 1914. The bill passed, without a vote against it, on the floor of the House of Representatives.

8. After the bill had been passed by the whole Senate Military Committee it was put on the calendar of the Senate ready for its last reading and final vote on the floor of the Senate. There the bill has not yet been called up; but it may be reached any day soon.

9. Up to September 2, 1914, sixty-six senators have indicated their intention of supporting the bill, and each day adds to the poll of those on whom we feel we can depend to support the measure when it comes to a vote on the floor of the Senate. This is the same as saying that all the senators of thirty-three states are for the bill.

10. The Senate has in contemplation the setting aside of two or three days for taking up bills waiting on the calendar, all the work upon which has been done, except the final vote on the Senate floor. Our professional representatives are endeavoring to get as many senators as possible to agree to take up our bill as one of these.

A LAST WORD.

As Poor Richard said: "A word to the wise is sufficient." The chain of events concerning this bill is almost complete. A

German savant has written complainingly that in the present crisis Europe has "placed a ring around the breast of Germany" and threatens its very life. The veterinary profession of America, with the kindly assistance of its hosts of friends from all parts of our country, has thrown a girdle around Congress, and the pressure has almost completed its results. The people have spoken and Congress is hearkening. It is high time for every loyal veterinarian, who may have neglected to train the artillery of his influence on his senator, to do so at this time of last opportunity. You can be helpful if you follow Benjamin Franklin's injunction: "Resolve to perform what you ought; perform without fail what you resolve."

G. S.

CHATTANOOGA THE CENTRAL MEETING PLACE FOR NEW ORLEANS CONVENTIONISTS.

In our August issue, under the caption, *Pleasurable Anticipations in Connection with the A. V. M. A. Meeting at New Orleans*, we described some of the beauties to be seen and enjoyed by going by way of the New York and New Orleans Short Line, leaving New York on the Pennsylvania and thence over the Norfolk and Western. Our narration of the beautiful scenery of Virginia included a description of Natural Bridge and the wonderful Caverns of Luray, which any who have not previously had an opportunity to read, should do so before reading our present article. Our thought was that perhaps Natural Bridge and Luray Caverns would be visited enroute to New Orleans, hence our description of them first. But we purposely refrained from discussing traveling plans at that time, feeling that it would be better to have an expression come from our readers after reading of the beauties throughout the land over which they would probably travel on their way toward the Gulf. After our editorial was in type, however, we received a letter from the Eastern Passenger Agent of the Norfolk and Western Railway

(which we published), suggesting that if we select their route we visit Chattanooga going and Natural Bridge and the Caverns on the return trip. We therefore will now endeavor to depict some of the sights in and around Chattanooga. This historic city is almost at the junction of three great states—Tennessee, Georgia and Alabama, and would be an ideal place of rendezvous for the veterinarians from Canada and the North, the Eastern, Western and Southern States; arrangements being made for a



LOOKOUT MOUNTAIN.

stop-over of a given time in which to see the wonders of this region that was regarded as the "key to the South" at the time of the Civil War; then proceed in a body to the convention city. Everyone who has not visited Chattanooga wants to do so, and it would be difficult to conceive of pleasanter auspices under which to make the trip. This city was once the camping ground of the most populous Indian tribes in the Central South. Until 1830, a little settlement on the bank of the Tennessee, known as "The Landing," was what is now the city of Chattanooga. From John Ross, a Cherokee chief, the name was changed to Ross' Landing, and remained such until 1839, when Chattanooga was incorporated. From the time the Indians were removed in 1838 until the outbreak of the Civil War, Chattanooga grew slowly.

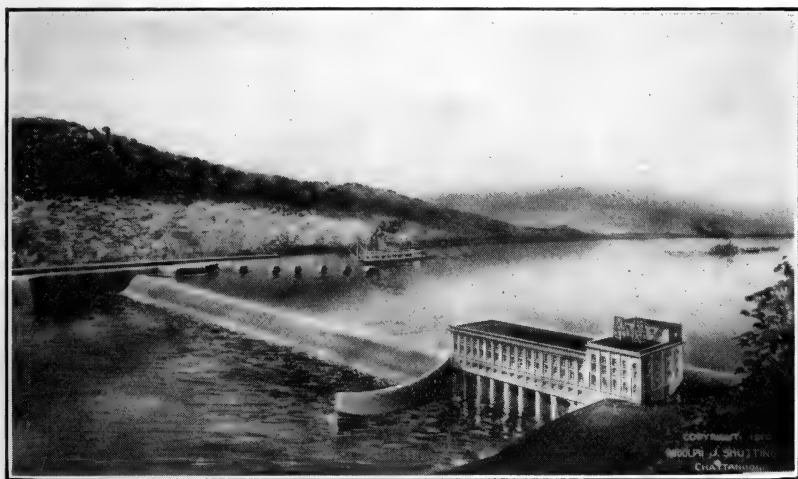
In 1840 the population of the city was 500, including whites, Indians and negroes. The first census taken following the war, in 1870, showed the population to be 6,073. The forty years since that date has witnessed the marvelous transformation into a city of 102,000 people according to the 1914 census. This city has adopted the commission form of government and looks forward to better conditions as a result. The climate is equable, the average temperature of the year being 60 degrees. It is described as having a "year around" climate, and is therefore both



MOCCASIN BEND FROM LOOKOUT MOUNTAIN, CHATTANOOGA, TENN.

a winter and summer resort, where one may escape from the two extremes of climate. The city is 700 feet above sea level, has mineral springs and is a great health resort. Lookout Mountain, famed in song and story, is 2,126 feet above sea level and 1,491 feet above the level of the Tennessee River. Our party may

stand upon the top of this mountain and get a view of seven states. On this mountain is the \$100,000 New York Peace Monument, erected by the Empire State as a memorial to her sons who fought in the Chattanooga campaign. The battlefields may be viewed from this point; also Moccasin Bend. Around



LOCK, DAM AND POWER HOUSE OF BRADY POWER PLANT, ON TENNESSEE RIVER, CHATTANOOGA, TENN.

Chattanooga endless beauty and grandeur attracts the eye. Signal Mountain, Rainbow Falls, with handsome bungalows, the Signal Mountain Inn, golf links and every means of pleasure and recreation. There is Chickamauga Park, once the Chickamauga battlefield, and Fort Oglethorpe, about forty minutes' ride from Chattanooga on the electric trolley line, can also be reached by a steam road. The old roads used by the soldiers of both armies have been reopened, the underbrush cut from 6,000 acres, and the battlefield is now in essentially the same condition as it was at the time of the great battle. Observation towers seventy-five feet high afford excellent views of Chickamauga Park and Missionary Ridge. The crest road on Missionary Ridge rivals the famous seventeen-mile drive at Monterey, California, in scenic effect. During the Spanish-American War, within the

memory of all of us, 60,000 soldiers were encamped at one time on the Chickamauga battlefield. Water power plants on the Tennessee and Ocoee rivers are prepared to contract for delivery up to 150,000 horse power in electrical energy to Chattanooga and the surrounding territory. And so we might drift from the historical and scenic into the industrial; as Chattanooga is a wonderful industrial centre. Iron, steel, timber products, clays and minerals, textiles, etc., etc., but we will leave those things which we find in most large cities to the imagination until we reach that great city of the South, when we will find ourselves looking up at large city buildings just as elsewhere. We have only just begun a description of Chattanooga, and yet we feel that we have said enough to convince our readers that when we suggest making it a meeting point for our members, from which to proceed to the "City of Romance" in a body, we have not asked them to meet at a cross-roads; for no less than ten lines of railroad radiate from Chattanooga, and last year 20,000 passenger trains entered Chattanooga's two passenger depots, the Terminal Station and the Union Depot. It is estimated that at least 175,000 tourists avail themselves of the stop-over privileges each year, from which it would seem that there is a wonderful attraction for this truly wonderful city. Let us have an expression on the suggestion that we make Chattanooga our central point from which to proceed in a body to New Orleans! We will welcome your views and give them publicity in our November number.

THE HORSE STILL OF FIRST IMPORTANCE ON THE BATTLEFIELD.

Far sighted business men have for years urged more extensive breeding of horses in the United States, maintaining that there would always be a market for good ones. Others have been more specific and have urged the more extensive breeding of horses suitable for cavalry remounts, as it has been apparent for

some time that that class of horse is deplorably deficient in this country. The same men have deplored the exportation of our best thoroughbred sires, which are the foundation from which the class of horse referred to must spring. That there has been a deficiency of that class of horses for home use, should conditions arise calling for cavalry equipment, has long been recognized, but the recent European war has driven the fact home, so that no person not rendered prejudiced by mechanical mania can fail to realize that the horse is a very potent factor in war, despite all the mechanical devices that have been introduced in the last decade. Had breeders in this country been breeding that type of horse extensively for the past ten years they would find a ready market for many thousands of them at the present time, as we have learned that thus early in the conflict the different countries engaged have deemed it expedient to replenish their horses and have sent agents to this country to purchase horses in large numbers. This country should learn its lesson from Europe in that respect, where it has been clearly demonstrated, just as it was in the Boer war, that the use of mounted troops in heavy masses is just as effective as it was in our Civil War, the invention of automobiles, aeroplanes and dirigible balloons, notwithstanding.

DR. MCKINNON ENGAGED—The *Manila Daily Bulletin* announces the engagement of Dr. J. A. McKinnon, veterinary inspector for the army in the Philippines, and Leila A. Stark, of the army clerical service, at the land transport depot. The date for the wedding has not been fixed as yet.

Dr. McKinnon is one of the most popular of the early arrivals in the inslands, having come here in 1902. He is in charge of the veterinary hospital at the land transport depot in addition to his other duties. He is also president of the veterinary examining board of the islands, and a prominent Elk.

Miss Stark, the charming young bride-to-be, is a recent arrival in the islands, having come here in April, 1913. Her home city is Portland, Oregon. She resides with Mr. and Mrs. Virgil on calle A. Mabini.

ORIGINAL ARTICLES.

ANAESTHESIA—LOCAL AND GENERAL.*

BY PROFESSOR G. H. WOOLDRIDGE, F.R.C.V.S., ROYAL VETERINARY COLLEGE,
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Anæsthesia, in the broad sense of the term, is "suspension of sensation," whether due to disease or injury or brought about by various agents called anæsthetics for surgical purposes. It is this so-called "surgical anæsthesia" that is to be dealt with in the course of this report.

The chief objects of anæsthetics in surgery is the abolition of pain during operations, the prevention of various reflex movements, and the production of muscular relaxation. They are thus very valuable agents from the humanitarian aspect, and also from the surgeon's point of view by facilitating diagnosis and treatment.

Anæsthetics may be either *local* or *general*, the former acting only on the part to which they are applied, and the latter acting on the central nervous system and causing complete loss of sensibility. The production of local anæsthesia is thus indicated for surgical operations on limited areas, and also when it is considered dangerous to produce general anæsthesia on account of some defective condition of the patient. General anæsthesia is indicated, or called for, in the more serious or major operations involving larger areas or body cavities, in bad cases of dystocia, to relax muscles in the reduction of herniae and luxations, and for the setting of fractures; and also, in the case of the dog, particularly, to cause relaxation of the abdominal muscles to facilitate the examination of the abdominal contents for diagnostic purposes.

The general advantages of anæsthetics both to the patient and the operator are now so well recognized, that in the British Isles, at any rate, their use is daily becoming more general, and I trust

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that the day is not far distant when no operation involving pain will be performed without the assistance of some anæsthetic or analgesic.

LOCAL ANÆSTHESIA.

Local anæsthesia can be brought about by various means. The old methods consisted of the compression of nerve trunks and the application of cold. The former was brought about by the use of the tourniquet, an agent now rarely used for that purpose, although still of great service in the practice of hæmostasis during operations on the limbs. The application of cold was accomplished by a mixture of equal parts of pounded ice and common salt in a muslin bag, and kept on the part for five or ten minutes until it was practically frozen. This method was superseded by the use of a spray of anhydrous ether or of ethyl chloride to freeze the part by rapid evaporation. These methods are not advocated now, as both the freezing and thawing processes are more or less painful, and if the part is too well frozen the healing process may be considerably retarded.

The local anæsthetics now employed are various chemical agents which produce paralysis of the peripheral endings of sensory nerves. They include cocaine, eucaïne, holocaine, novocain, stovaine, acoïne, tropacocaine, and hydrochloride of urea and quinine, and they may be used singly or in combination, either by painting on to the surface or by injecting into or round the part to be anæsthetized, or by injecting over the trunk of the nerve supplying the part. Excellent advantage can be taken of this latter method in anæsthetizing the foot of the horse both for operations within the hoof, where for obvious reasons the local anæsthetic cannot be directly injected into the tissues, and also for assisting in the diagnosis of the seat of obscure lameness by the process of exclusion. In such cases the anæsthetic may be injected over the plantar nerves above the fetlock joint.

Cocaine was the first chemical agent used in the production of effective local anæsthesia. (It was used for its effect on the eye about thirty years ago.) We will consequently consider cocaine

first, and treat it later as a standard of comparison for various substitutes that have been introduced since Schleich demonstrated its wonderful utility when infiltrated into the tissues.

The pure alkaloid cocaine is only very sparingly soluble in water, but its salt, the hydrochloride of cocaine, is freely soluble in water and alcohol, and, being equally efficacious, is employed. When a five per cent. solution of cocaine HCl is applied to a mucous membrane or injected into the cutaneous or subcutaneous tissues, the first noticeable effect is pallor due to vascular contraction occurring in about one minute; two or three minutes later the part has become insensible to pain and touch owing to paralysis of the sensory nerves of the part. This is due to a direct affinity on the part of the cocaine for the cell protoplasm, especially of the sensory nerve-endings. This affinity for protoplasm should be well remembered when deciding upon the strength of the solution to be employed. The writer has frequently observed that when more concentrated solutions than 5 per cent. are infiltrated into operation areas, the healing of the operation wound is very materially retarded. The affinity of the cocaine in those strong solutions is such that it actually becomes a cell poison, and either markedly reduces the vitality of the cells or even destroys it, and healing by "first intention" is rendered impossible. The writer, therefore, in the light of further experience, prefers to employ for infiltration anæsthesia larger quantities of weaker solutions, and injected at a series of points round the operation area, rather than a smaller amount of a stronger solution injected directly into the site of operation, a view contrary to one which he expressed several years ago when writing on the same subject. For injection into the tissues, 1 per cent. to 4 per cent. solutions are to be preferred to the stronger solutions, though the latter, from 5 per cent. to 10 per cent., may be employed over a nerve trunk to produce conduction anæsthesia of a part below. In such cases the cells of the part directly exposed to the cocaine are not further mutilated by the operation incision, and the ill-effects are not so likely to occur; moreover, the anæsthetization of the remote parts is more likely to be complete.

When injected under the skin the area anæsthetized extends about an inch round the point of the needle. The insensibility occurs in from three to five minutes, and lasts from twenty to thirty minutes.

The amount of cocaine that can be injected with safety and without causing muscular spasms likely to interfere with operation varies with the idiosyncrasy of the patient. In the small or so-called toy dogs one-tenth of a grain (*i. e.*, 10 minims of 1 per cent. solution) for each pound body-weight is usually quite safe. In larger dogs the same proportion may be employed, but in any given case 2 gr. (40 minims of 5 per cent. solution or 100 minims of 2 per cent. solution) must be regarded as the maximum amount. In the cat the same proportion may be employed, but one-quarter of a grain must be regarded as the maximum safe dose.

In the horse the maximum dose is 10 gr., an amount which is rarely required. Some horses are much more susceptible than others, and I have seen great excitant toxic effects follow the hypodermic injection of 2 dr. of a 5 per cent. solution containing about 6 gr. of cocaine. Two grains in 40 minims of water injected over each plantar nerve will completely anæsthetize a horse's foot. I have no experience in the use of cocaine in cattle, except for the eye in cases of chaff under the eyelids, in which case it is very effective, allowing the foreign body to be removed quite painlessly, and in the operation for carcinoma of the orbit.

The local anæsthetic action of cocaine is much improved by combining with it solutions of suprarenal extracts as adrenalin, or its synthetic substitutes suprarenin, adnephryn, and renastypsin. These agents cause a contraction of the vessels at and around the seat of injection, rendering the part anæmic, and reducing the local circulation. Consequently the absorption of the cocaine into the general system is retarded, and the local anæsthetic action is rendered more complete and more prolonged. Less cocaine is necessary, and the danger of poisoning is thus reduced in both ways. The operation is further facilitated by being almost bloodless. The amount employed is from 5 to 10 minims of 1:1000

solution for dogs, and up to 1 dr. of a similar solution for horses.

When small doses of cocaine are absorbed into the general circulation, the effect is to act as a restorative and general stimulant of the central nervous system, and is consequently a very useful agent for producing local anæsthesia and minimizing surgical shock in weak animals, especially dogs, when general anæsthesia is regarded as dangerous.

When too large doses of cocaine are injected toxic symptoms are set up. A few minutes after the injection in such cases the patient begins to lick his lips and salivate, the eyes become dilated, and visual accommodation is interfered with, excitement and hyperæsthesia are produced, the ears are moved rapidly backwards and forwards, and there are well-marked muscular twitchings or clonic spasms, and interference with co-ordination of movement, while horses paw the ground and are often difficult to control. This state of affairs, and particularly the muscular spasms, obviously defeat the object of the administration of the cocaine, and it is impossible to proceed with the operation until the symptoms subside, which may be several hours later. In the smaller animals it may prove fatal by paralyzing vital nerve centres and causing syncope or asphyxia. If one wanted to be certain of killing a dog by cocaine, however, it would be necessary to inject from 5 to 8 gr., according to size, which would be fatal in about half an hour, while from 2 to 3 gr. is necessary to be certain of killing a horse. The best antidotal treatment in susceptible animals appears to be the administration of either morphia or caffeine hypodermically, or a good dose of strong coffee, together with perfect quietness.

Owing to the toxicity of cocaine, a number of very useful synthetic substitutes have been introduced, their chief recommendation being that they can be used with much greater safety in the smaller and more susceptible animals. These agents include novocain, B-eucaine hydrochloride, hydrochloride of urea and quinine, stovaine, holocaine, tropacocaine, acoine, and others.

I have had considerable experience with each of these three first-named, and I do not recollect having any untoward results

from any of them, using them in precisely the same manner as cocaine. They each have certain advantages over cocaine, and, like cocaine, their effect is improved by a combination with a hæmostatic.

Novocain is a non-irritant local anæsthetic freely soluble in water, and may be sterilized by boiling. It may be used in similar strengths (2 per cent to 5 per cent. solutions) as cocaine, and in much larger quantities without the danger of producing toxic effects. I consider novocain to be about the best of the local anæsthetics.

Hydrochloride of B-eucaine is also a very good local anæsthetic. Compared with cocaine it is less toxic, its action is longer in commencing, but also more prolonged. It can also be sterilized by boiling. It is often advantageous to combine cocaine and eucaine in order to obtain the quicker action of the former and the more prolonged action of the latter. When combined the solution should only contain half the percentage of each ingredient.

Hydrochloride of urea and quinine is probably the least toxic of all the local anæsthetics. It is effective in solutions of 1 per cent. to 5 per cent., and can be used on quite young animals with perfect safety, and it is very cheap. It is, however, very slow in bringing about anæsthesia, and requires to be injected about thirty minutes before operating; while, on the other hand, its effects are very prolonged, extending in many cases even up to twenty-four hours. The advantages of this is, of course, very obvious in many of our patients, as it reduces the tendency of the patient to interfere with an operation wound during, at any rate, the first day. It does not appear to possess any effective hæmostatic property, and may be combined with adrenalin with advantage. I have amputated digits in dogs, and excised tumors in dogs and horses in comfort without any indication of pain in nervous animals that have objected strongly to the primary introduction of the hypodermic needle.

Spinal Anæsthesia.—Intraspinal injections of sterilized local anæsthetics introduced in the lumbar region may be used to pro-

duce anæsthesia in the posterior part of the body and the hind limbs. Under this anæsthetic quite serious operations in the human subject can be performed painlessly in patients for whom general anæsthesia would be dangerous. Macqueen, in "Veterinary Medicines" (Finlay Dunn), says: "The injection is made through the lumbo-sacral space at the point of intersection of two lines, one median uniting the last lumbar and first sacral vertebræ, the other transverse connecting the summits of the internal angles of the haunch." The entrance of the needle into the subdural space is indicated by the escape of cerebrospinal fluid. The present writer has no experience of this method, and would with difficulty be persuaded to attempt it, since equally advantageous results in the smaller animals may be obtained by other means much less dangerous, such as the application of a local anæsthetic in combination with the administration of a full dose of morphia half an hour or an hour previously. The chief objections are the uncertainty of absolute asepsis, the difficulty of injecting the anæsthetic into the proper place, and without injury to the spinal cord, and the serious nature of the complications if they should arise in this particular situation. In the larger animals, moreover, the distance of the spinal canal from the skin renders the injection still more difficult.

GENERAL ANÆSTHESIA.

As already indicated, general anæsthesia implies a temporary complete suspension of consciousness and of sensation. The writer would differentiate it from narcosis, in that in the case of the latter the loss of consciousness is not complete; an animal can be wakened up by such things as a loud noise or a smack, only to fall off to sleep again without the administration of any further agent; the narcosis is more tardy in being produced, and is much more prolonged. The effect of a general anæsthetic is more rapidly induced, more complete, but more transient. A patient regaining consciousness or awakening from a general anæsthetic does not again lapse into unconsciousness without further ad-

ministration of the anæsthetic. The difference between the effects of morphia and chloroform well illustrates the writer's contention.

The method of induction of general anæsthesia is by inhalation and the principal agents employed include nitrous oxide, chloroform, ether, and mixtures of alcohol, chloroform and ether, such as A.C.E. mixture (alcohol, 1 part; chloroform, 2 parts; ether, 3 parts), and A.E.C. mixture (alcohol, 1 part; ether, 2 parts; chloroform, 3 parts). Of these chloroform is the most effectual, and, if properly administered in veterinary practice, it is a very safe anæsthetic. Proper administration includes the preparation and the preliminary examination of the patient as to the condition of the heart and lungs in particular. If the heart is weak, irregular, or intermittent the administration of chloroform for anæsthesia is decidedly dangerous, and the same applies when there is fluid in the chest, and, to a smaller degree, in cases of destructive lung disease, such as consolidation or extensive emphysema.

Preparation of Patients for Chloroform Anæsthesia.—The horse is an excellent subject for chloroform, and requires but little preparation. Except in the cases of urgent operations it is well to keep the patient on a laxative and somewhat restricted diet for a day or two, completely withholding long hay or bulky food the night before, a muzzle being put on to prevent him eating his bedding. On the morning of the operation he may have a limited allowance of water and a small feed, such as a bran mash.

In cattle the preparation is similar. Cattle are quite good subjects.

Adult robust dogs are good subjects for chloroform if administered with care. Very young and very fat dogs are bad subjects. Especial care must be taken with the toy breeds and the short-nosed varieties, as bulldogs and pugs. The food should be diminished the day before, and only a light meal given on the morning of operation, and not within two or three hours of the operation.

Adult cats are good subjects for chloroform if plenty of air is allowed, but ether and A.C.E. mixture are usually safer.

ADMINISTRATION OF CHLOROFORM FOR ANÆSTHESIA.

Horses and cattle are usually cast with hobbles, and all undue pressure on the throat and chest avoided. The chloroform may be administered in the standing position if there is plenty of room. The latter method may be advocated in the case of very refractory horses that are difficult to cast, and with some old horses with ankylosis of the spine, and whose back might be injured if cast in the usual way. The injury to the back, however, is usually due to violent muscular contractions while under restraint, and is rarely or never brought about by the act of casting. I do not, however, regard the procedure of chloroforming standing with favor. Although in some cases the horse may submit very quietly to the process, in other cases he will become somewhat violent, and will rear or plunge, or may fall over backwards. If done in a large loose box or operating theatre he is also likely to get down in a corner in an awkward position. I quite realize the advantages in cases where the horse cannot be cast, but where casting is possible I regard it as an infinitely preferable method of procedure.

Apparatus for Horses.

For the administration of chloroform vapor a muzzle or inhaler is necessary, and there are several varieties commonly used in England.

(a) The simplest is one commonly used in this country and known as *Cox's inhaler*. It consists simply of a cylinder of leather or tarpaulin, which fits only on the upper jaw, passing in the mouth to the commissures of the lips. It possesses a running string round the top, so that it can be drawn tightly round the nose to prevent or reduce the ingress of air. It is held in position by a strip which passes over the poll. The chloroform is poured on to a sponge previously squeezed out with hot water to facilitate volatilization, and is inserted into the free end of the

cylinder, which is then closed with a towel to limit the ingress of air. The nostrils should be first smeared with lard to prevent the chloroform blistering the skin, unless the muzzle is made with a wire or string netting across its interior to prevent the sponge coming into contact with the skin.

(b) *Carlyle's chloroform muzzle* is a very good one, but in the writer's experience not quite so safe as the former, as it may exclude too much air and cause asphyxia. It fits closely round the nose and mouth by means of a small bolster, while the other end is quite closed, except for a slot into which fits a tray with a sponge guarded by a wire netting. The chloroform is poured on to the sponge and the tray inserted, and then the end is completely closed by means of a leather flap.

(c) *Roberts' muzzle*, as used by the late Mr. Richard Roberts for the administration of chloroform in the standing position. It consists of a leather cone, fitting tightly over the lower end of the face by means of a bolster and strap. At the lower end of the cone is a hole into which fits a fairly large cork or bung. The chloroform is poured onto a sponge loose inside the mask and the cork inserted. More chloroform is inserted as necessary by the removal of the bung. It appears to me that by this method and the Carlyle method the result is attained by partial asphyxiation, a course open to grave objections from the humanitarian standpoint and causing great distress to the patient in the early stages of the procedure.

(d) *A modification* of Junker's method has been applied by Hoare to the horse. It consists of driving air by means of a foot bellows through chloroform in a flask and on into the mask applied to the face. This is probably the most scientific method, for in this way the amount of chloroform vapor being inhaled can be most easily controlled. It is, however, by far the most laborious method, and since the horse is such an excellent subject, such a nicety of concentration or dilution of the chloroform appears to be quite unnecessary, and, taken as a whole, the method is not as satisfactory as some of the others. I have also seen a horse asphyxiated by this method.

(*e*) The muzzle introduced by Mr. Nelder, of Exeter, appeals to me as being the best of all. It consists of two portions; the one placed first over the lower end of the face is cylindroid and made of tarpaulin, and to its upper portion is fitted a bolster, which can be drawn tight and so prevent the entrance of air from above. It is fastened over the poll by means of a strap. The lower end is closed by a disc of leather much perforated, through which respiration takes place. A deep leather cap is made to fit over this, and is held to the former portion by straps and buckles. It holds a circular piece of felt or a sponge on to which the chloroform is poured, and when in position this is held against the perforated disc of the muzzle. All air passes between the two portions and over or through the sponge, and the amount of air is regulated by the closeness or otherwise of the outer portion to the inner by tightening the buckles or relaxing them. In no case should it be drawn quite tight, since partial asphyxiation should be avoided. I consider this to be the best chloroform muzzle for a horse for administration either standing or in the recumbent position.

In chloroforming the horse with either inhaler *a*, *b*, *c* or *e*, from 6 dr. to 1 oz. of chloroform should be first applied to the sponge, and further amounts of 2 dr. to 3 dr. at a time as required. With good subjects, if administered without waste, 1 oz. to 1½ oz. is sufficient to anæsthetize him in about ten minutes, and a total of 2 oz. to 3 oz. will keep him well under for half an hour or so. In England it is a common thing to exclude as much air as possible, but the writer does not entirely agree with the practice. He realizes that anæsthesia is more quickly obtained by this means, and that it is more economical of chloroform, but it is at the expense of partial asphyxia. He prefers to allow more air and to use more chloroform. If given standing, however, a much larger dose is given to begin with, as 1½ to 2 oz., or even 3 oz., owing to the difficulty of repeatedly adding small doses. Some horses appear to be very resistant and practically immune to the anæsthetizing action of chloroform. Macquæen quotes a case in which he gave 14 oz. without producing anæsthesia, and the writer has also seen 16 oz. administered in vain.

Apparatus for Dogs and Cats.

Chloroform is best administered to dogs stretched in a prone position on the operating table; collars should be removed.

The simplest apparatus consists of an ordinary wire muzzle, and over it a towel, which should be only one layer thick, and to which the chloroform is applied by means of a drop-bottle. This method is only safe for large and adult dogs, care being taken to allow plenty of air, and not to be too free with the chloroform.

Another very simple and effective method is to pour chloroform on to a piece of lint or wool contained in a chip box and held over the nose. By this method there is an unlimited supply of air, and although it has the appearance of a rough and ready method, it has much to recommend it.

Junker's apparatus is good for strong and large dogs. It consists of a cone-shaped mask with an open apex. This is placed on the face, and by means of a pump air is driven through chloroform in a bottle, and, thus saturated, is passed on into the muzzle. On passing through the bottle the air takes up about 2 per cent. of chloroform. By means of one's hand at the open apex the amount of fresh air may be regulated and further dilution permitted or otherwise.

Hobday has introduced two modifications of Junker's method, both leading to much greater safety for smaller dogs and for cats. By one method air is *driven over* chloroform and on into the mask. By the other method the pump is placed between the flask containing the chloroform and the mask, and air is *drawn over* the chloroform and passed on into the mask. This latter method is the safest for very small dogs and for cats, as the chloroform vapor is so very dilute (1:1000 to 1:5000), so much so that the method is useless for larger dogs, and must be supplemented with additional chloroform on wool placed in the mouth of the mask. The pump is of rubber, and has an elastic reservoir and a stop tap at the mask to regulate the flow and to get a continuous current of air and chloroform vapor.

The secret of success is the slow but continuous administration and the removal of all restraint to free and easy breathing.

Symptoms of Chloroform Anæsthesia.

The effect of the inhalation of chloroform vapor can be observed as occurring on four stages, namely, (1) The stimulant; (2) the narcotic; (3) the anæsthetic; (4) the paralytic.

In the *stimulant stage* the first effect is a vigorous struggle of alarm, and that is quickly followed by excitation of the cerebral and cardiac functions. The pupil becomes dilated, and the pulse and respiration are accelerated, and fæces and urine are often passed. Vomition, even in the dog and cat, is very rare. This stage may last from one to five minutes, but is markedly shortened if the patient has previously received morphia hypodermically, or chloral hydrate by the mouth. It is not entirely without danger, especially in cases of cardiac affection, as the excitement may cause arrest of the heart's action, and attempts at restoration are rarely effective. Another danger is that in some cases where the chloroform has been administered in a too concentrated form the respiratory centre may be overstimulated, and respiration may suddenly cease even before the patient has reached the anæsthetic stage. In patients with a normal heart, however, this first stage gradually merges into the second, or *narcotic stage*. In this stage, generally reached within five minutes, there is great depression of the motor centres, and the voluntary muscles become relaxed, commencing at the hind limbs. In the recumbent horse struggling ceases, and the tail becomes relaxed. If administered standing the horse has become unable to support himself, staggers and falls gently, or is easily pushed over. In the dog and cat secured in the prone position the head sinks to the table, and there is often a slight whimpering as though the dog were dreaming. In each case the reflex functions are only dulled, and sensibility is not completely lost. This is a useful stage for controlling labor pains in cases of difficult parturition in both large and small patients, and also for minor operations. In the third, or *anæsthetic stage*, there is complete muscular relaxation and complete loss of consciousness. Reflexes are completely lost, pupils slightly contracted. The pulse and respiration become slower, even and regular. This is the

true surgical stage, and if the chloroform is continued very slowly it can be maintained for an hour or two with perfect safety, since none of the vital nerve centres of the medulla, such as those controlling respiration and the action of the heart, are seriously affected. If, however, the chloroform be administered at this stage either copiously or with very limited admission of air, then a dangerous *paralytic stage* is produced owing to the medullary centres becoming involved. The pupils become widely dilated, while the respiration becomes shallower and stertorous, irregular and jerky, and may suddenly cease. The pulse gets slower and weaker, but the heart may continue to beat several minutes after respiration has ceased. In such cases, if the chloroform is quickly stopped and plenty of fresh air admitted, respiratory stimulants and artificial respiration resorted to, the respiratory function is generally resumed. In some cases, however, if the chloroform has been pushed too far, the respiration cannot be restored, and death occurs from asphyxia. In other cases the heart's action may cease simultaneously with or even before the respiration, and in my experience in such cases have resisted all restoratives and have always proved fatal.

In the Hyderabad experiments of 1888-9 it was clearly demonstrated that when lethal doses of chloroform were administered to healthy animals respiratory arrest always occurred from two to six minutes before cardiac arrest. This confirmed what was previously taught by Simpson, that the careful observation of respiration is of paramount importance for safety in chloroform anæsthesia. Consequently anything with a tendency to impede respiratory functions must be studiously avoided, as already indicated. The anæsthetist must see that the anæsthetic is being administered slowly and regularly, and he must keep a watchful eye on the character of the respirations. He should not concern himself with the work of the surgeon, however interesting it may be, for the chloroform must be withdrawn at the first indication of danger. The anæsthetist must remember that the work of the surgeon, however skillful, is of no avail if the patient should succumb to the anæsthetic.

The signs of danger may be summed up shortly thus: Shallow spasmodic or jerky breathing, stertor, cessation of respiration, intermittent pulse, and widely dilated pupils. In the dog and cat also the coat may be seen standing up, and even turning the wrong way.

Antidotal Treatment.—At the first indication of danger the chloroform should be stopped and the inhaler removed; all obstructions to free respiration must be removed. The tongue should be pulled forward in the month, and mucus and saliva mopped out. Remove hobbles and admit plenty of fresh air, or even oxygen if at hand. Then administer as quickly as possible a full medicinal dose of hydrocyanic acid, of 2 per cent. solution for horses 1 dr. and for dogs and cats 2 to 5 minims. It may be dropped on to the dorsum of the tongue or injected hypodermically. It acts as a powerful and rapid, though transient, stimulant to the respiratory centres, and in the writer's experience is far the best agent.

Artificial respiration should also be resorted to by rhythmically contracting and expanding the chest by jerking pressure on the chest wall and by alternately extending and flexing fore limbs. Peripheral irritation may also be good, such as cold douche or flicking with a wet towel or a whip.

The *cautious* insufflation of strong ammonia is good as cardiac and respiratory stimulant. Amyl nitrite may be useful by dilating superficial vessels and so relieving the heart. It may be either insufflated, or dropped on to the tongue or injected subcutaneously in doses of 10 to 20 minims for the horse, and 1 to 2 minims for the dog. Hypodermic injections of ether, liquor strychninæ or adrenalin may all assist.

In favorable cases respiration starts with gasps in from one minute upwards, and hope should not be abandoned until the artificial respiration has been continued at least fifteen to twenty minutes, or so long as the heart beats, be it ever so feebly. If, however, the heart's action completely stops the case is usually hopeless.

How does chloroform produce its effects? Very exhaustive

experiments in this connection have been carried out by our colleague, G. A. Buckmaster, and his co-worker, J. A. Gardner, and their results are published in the proceedings of the Royal Society. They have shown that the effects of chloroform anaesthesia depend upon the exchange of gases in the pulmonary alveoli and blood, and that the red corpuscles alone act as the chloroform carriers. In the early stages the absorption is very rapid, and less so later on. The red corpuscles convey it to the various parts of the body, and discharge certain small amounts to the tissues, and especially to the central nervous system. The first effect of that is to stimulate the nerve centres, and this stimulation may even approach a lethal value constituting the first danger point previously referred to. It may cause cessation of respiration owing to paralysis of the respiratory nervous mechanism, and is more likely to occur as the result of a deep and rapid respiration, and a higher percentage of the drug administered. If this stage is safely passed the cerebral centres become depressed, and complete anaesthesia may be attained safely. If the chloroform is continued in high dilution elimination takes place by expired air and an equilibrium is established. If, however, a larger quantity of chloroform is rapidly administered it gets into the plasma, and is co-existent with a decidedly dangerous stage in which the respiratory centre is overdepressed, and breathing stops.

The facts that in respiratory chloroform anaesthesia the red corpuscles transport the drug, and that chloroform is not present in the plasma except in dangerously advanced stages, would appear to explain the lack of success following the attempts to produce anaesthesia by the intravenous injection of chloroform. In the opinion of the writer such a method, though worthy of further investigation, does not appear very promising.

After-treatment and After-effects.—When the operation is about completed the chloroform inhaler is removed, but in the horse the hobbles should be kept on until consciousness has fully returned. It is a mistake to allow a horse to attempt to rise until there is a reasonable prospect of his being able to support

himself. The time required may be from five minutes to half an hour, or occasionally, even longer. If a horse has been lying long on the one side, the writer has frequently noted that he is likely to rise more quickly and is more able to support himself if he is turned over on to his other side a few minutes before he is allowed to attempt to get up. If, after a reasonable interval, he does not make any effort to rise, he may often be induced to do so, either by flicking with a wet towel or a whip, or by pouring a little water into an ear. When rising he should be supported by an attendant with a short hold of the bridle, and another attendant at the tail. He should then be kept slowly moving with his head to the wind until he completely gains his equilibrium. He may then be put into a loose box, but should not be secured by the head, in case he should fall again. About an hour later he may be offered a drink of tepid water or oatmeal gruel, mashes being offered later. During the first day dry foods and long hay should be withheld. In the case of the dog he should be placed quietly into his apartment and only offered a little milk or a little tepid water for the next few hours. Sometimes the patient will only feed capriciously the next day as the result of nausea, but this condition rarely lasts longer.

Unfavorable sequelæ to chloroform in our patients are very rare. Occasionally a nostril may be blistered when a sponge has been applied to an imperfectly lubricated nose. Pneumonia is sometimes spoken of as being a sequel, but the writer, in an experience involving the use of chloroform in many thousands of cases, has never met with pneumonia directly attributable to chloroform.

Ether Compared with Chloroform as a General Anæsthetic.

Ether is more disagreeable to the taste and causes a much larger increase in salivation than chloroform. The preliminary stage of excitement is longer and the anæsthesia more transient. On the other hand, it is less dangerous owing to its less depressant effects. Therefore it is safer to use on patients with weak hearts, and young or fat patients. It must, however, be administered in a much more concentrated form as half ether va-

por and half air, conditions which make it very difficult to use for large animals.

A.C.E. mixture and A.E.C. mixture occupy intermediate positions between ether and chloroform.

In the writer's experience, however, chloroform is by far the best agent for the production of general inhalation anaesthesia.

The Combination of a Narcotic and a Local Anaesthetic.

The application of respiratory anaesthesia has the disadvantage of requiring a trained anaesthetist as well as the operator, and owners frequently refuse to pay adequately for such services. A common alternative is for the operator to administer the chloroform and direct it at the same time as operating; an objectionable alternative for obvious reasons.

Consequently, for dogs, the writer very frequently dispenses with chloroform and employs a large dose of morphia, with or without the addition of a local anaesthetic according to the case. The dose injected hypodermically varies from $1/3$ gr. in a puppy of the toy breeds to 2 gr. or even 3 gr. for adults of the large varieties. After such injection the dog usually vomits in from one to five minutes, and sometimes faeces and urine are evacuated. Narcosis is complete in about three-quarters of an hour, when the operation can be proceeded with. One great advantage of this method is that the dog remains in a state of stupor for eighteen to twenty-four hours, and so refrains from interfering with the operation wounds. For major operations involving the peritoneal cavity, a few whiffs of chloroform may be necessary, but great care must be taken as the excitant stage is practically non-existent and complete anaesthesia is very rapidly produced with a minimum of chloroform.

Chloral hydrate, administered *per os*, or injected into the peritoneal cavity in dogs, has not given such satisfactory results in the writer's experience.

The use of morphia and of chloral hydrate in the horse have also been disappointing, and we have not persisted with them, mainly because we have always found the horse to be such an excellent subject for chloroform.

RESPIRATORY ANAESTHESIA OF ANIMALS.*

REPORT BY DR. L. A. MERRILLAT, PROFESSOR OF SURGERY IN THE MCKILLIP
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I have decided to limit my remarks to the above title because the distinguished reporters, Professor Hendricks, Professor Vennerholm and Professor G. H. Wooldridge will undoubtedly present the complete formal discourse on the general subject, and, besides, my experiences with intravenous, hypodermic, intraperitoneal and rectal anaesthesia has been so disappointing from every standpoint that I lack the inspiration to write about them.. On the other hand, my experience in anaesthetizing about ten thousand horses and many small animals by inhalations inspires me to report the confidence that can be placed in the old, standard, conventional method.

Naturally we Americans are proud of our achievements in this connection. We seldom fail to point with pride to that historical event in the Massachusetts General Hospital in November, 1846, where the first major operation under inhalation anaesthesia was performed. Dr. W. T. G. Morton, under whose supervision the anaesthesia was administered for this eventful operation, is a much revered man with us, and while we are not unmindful of what followed in Europe to bring his discovery into greater prominence than was possible in America at that time, we are more and more inclined, as surgery progresses, to claim for Morton a place among the great benefactors of the human race and of the animal kingdom. At least, an American speaking abroad would be accused of a sin of omission if he failed to pay tribute to Morton's memory while dealing with the subject of respiratory anaesthesia.

Veterinarians in America—and, I believe, the world over—have been very slow to avail themselves of this most effectual

* Reprinted—Tenth International Veterinary Congress, London, 1914.

and most certain method of controlling surgical pain. Substitutes for this complete general anæsthesia, which only stupefy surgical patients, and local anæsthetics have always attracted more attention in the veterinary profession. Our current literature is often full of new methods of anæsthesia, but it is signally lacking in instructions on the administration and proper management of inhaled anæsthetics. We seem to be acting toward respiratory anæsthesia as if it were an exact science of which everyone is master; as if we had exhausted all of its possibilities, and, finding it faulty, we must now seek for other methods; and as if it were attended with obstacles or dangers which make it inapplicable to our work. In short, respiratory anæsthesia is still little used, and is still too little understood in the veterinary profession. It has never been extensively practised.

Anæsthesia extending to the point of complete relaxation of the musculature, in the hands of the untrained, is an exceedingly hazardous state. If prolonged for an hour or two the hazard increases. On this account a veterinarian about to perform an operation of some duration, the technique of which will require his full attention, is always inclined to avoid this method of controlling pain. In fact, it does offer disadvantages he cannot easily overcome. Trained anæsthetists are not numerous, certainly not within the reach of all veterinarians, and where one can be procured, the added cost to the already ill-paid surgeon prevents his employment. When the anæsthesia is entrusted to untrained hands, the mental strain of dividing the attention between the safety of the unconscious patient and the operation itself invites disaster from both sources.

But in spite of this dark side of the question there is such a bright side that it seems a pity we practice it so seldom. Safe respiratory anæsthesia depends solely upon keeping well under the lethal dose for a given patient. That is, *we must not poison our patients*. To produce maximum anæsthesia with a minimum of drug is the desideratum, and it is only by accurate dosage in its highest possible refinement that this can be accomplished. In this we are confronted with the task of delivering an elusive

vapor to our patients in a given quantity. That this is a problem difficult of solution I admit, but being an exceedingly important matter as well as the real solution of safe anæsthesia, it behoves us to work to this end as the expert anæsthetists of human beings are doing. Automatic mechanical measurement of vaporized chloroform or ether and the effectual delivery of a given amount to a patient will make anæsthesia an exact science. Anæsthetists of humans have the matter well in hand by utilizing complicated apparatuses adaptable for their use. Similar apparatuses applicable to animals are needed to bring our respiratory anæsthesia nearer to perfection.

When an operation is short and the patient vigorous, the limit of safety need never be approached, but when the operation is a long-drawn-out affair and the patient sick and weak, the limit of safety is easily exceeded. From the beginning it has been the custom of anæsthetists to gauge the dosage by the reaction of the patient. Little attention was paid to the amount consumed. To-day the amount consumed is being pre-eminently considered, and splendid methods of regulating this amount are being worked out. The uncertainty of depending entirely upon the reaction of the patient needs no comment. Such observations are sometimes misleading. They permit of no fine explanations for the instruction of others, and thus prevent the standardization of methods through which uniform results can be achieved.

That respiratory anæsthesia may be safely entrusted to the student, the inexperienced assistant, or fellow-practitioner is wrong. The successful administration of an inhaled anæsthetic requires a wealth of experience. Of this I am convinced. Respiratory anæsthesia is safe enough when neither profound nor prolonged, and especially when administered to a sound, vigorous subject properly prepared for the ordeal. It is particularly safe when the operation is of such a character as to wield but little influence on the course of the anæsthesia. On the other hand, patients sick with disease of an enfeebling character, requiring an exhausting operation of long duration (one hour

or more) very readily fall victims to badly administered anæsthetics. It is in these cases that the skill of an experienced anæsthetist is needed to carry the patient safely through the operation and to prevent post-anæsthesia complications. Exceptionally sanguinary operations are also dangerous when the anæsthetic is badly administered. When the blood loss reaches the danger point prolonged and profound anæsthesia is exceedingly dangerous. A surgical patient weak from blood loss and saturated with chloroform or ether is always a real hazard.

I therefore divide all patients requiring general anæsthesia into three groups as follows:

First Group.—In this group I include all patients which can be safely anæsthetized without any especial skill on the part of the anæsthetist. The operations are of short duration, and the patients are vigorous. Their afflictions have not affected the general health to any appreciable extent, and the operation will not exert much influence upon the anæsthesia. I refer here to neurotomy, tendonotomy, ablation of small growths, castrations, hoof operations and other minor operations too numerous to mention. For such operations respiratory anæsthesia is always better than local or regional, and sometimes it is absolutely necessary to obtain the best results. Accurate work is often impossible under local anæsthesia, because these do not control the struggles against restraint. Intractable horses, vicious horses and nervous dogs are never well controlled with local anæsthesia, and so often local anæsthesia is not complete. For example, in the operation of dividing the tendon in volar flexion the slightest jerk of the leg at a crucial part of the work prevents accuracy, and such disturbing movements are never effectually controlled by any form of anæsthesia except that produced by inhalations of chloroform or ether.

All the operations of this group are of relatively short duration, complete or prolonged relaxation of the musculature is not essential, and the patients are in good health and well prepared. The danger is therefore negligible even when the administration is left to more or less inexperienced hands. The state of

unconsciousness required for these operations is but a transient hypnosis—an anæsthetic veneer—that is seldom dangerous. The painless steps of the operation, such as washing the field, shaving, paring of hoof, etc., are all done before the anæsthetic is administered; then, as soon as the painful part is completed, the patient may already be reviving while the bandages are being applied. In this manner the time of total unconsciousness is very short.

In this group of patients I bring about a state of surgical anæsthesia in a few minutes by forcing the delivery. Sixty to ninety cubic centimeters of chloroform (for horses) is placed in the sponge, which is large enough to hold it all without dripping, the muzzle is anointed with vaseline, and the sponge is held to the nostrils in an air-tight sheet of oilcloth large enough to fold over the head when gathered up. The anæsthetist bears upon the poll and holds the sheet in place by encircling the arms around the nose. By thus holding the nose from the floor or table the head can be well controlled against the struggles which ensue as the administration begins. In from *one to two minutes*, when the struggling ceases and the respirations become soft and more shallow, the sheet is spread out and the administration continued by dropping the chloroform through a towel stretched over the uppermost nostril. The undermost nostril is free from obstruction. In the short minor operation no especial attempt need be made to bring about a very profound state of anæsthesia, as the work is often done before all the reflexes have been banished. When, however, the operation is of longer duration or a relaxation of the musculature is desired, it is safe enough to force the administration to a successful issue by closing the undermost nostril as the chloroform is dropped into the towel on the uppermost one. This is continued until the *corneal reflexes* wane or disappear. It is not safe for the novice to push matters too far at this point. It is better for the inexperienced to err in the direction of too little anæsthesia than to venture too near the danger point. Almost all of the operations of this group can be effectually completed without entirely dispatching

the corneal reflexes. The state of the *respirations* must then be kept under strict surveillance. If regular, everything is well, but when a pumping or jerky state develops, the free admission of air without any chloroform must be insisted upon until the unnatural breathing corrects itself. The shallow inspiration that ends in a sudden collapse of the abdomen is a bad sign, and even the deep inspiration that ends thus must be regarded with a suspicion that the danger point is being approached. I always hesitate to say too much about the corneal reflexes as safeguards against danger because too much dependence cannot be placed upon them. Better to note carefully the story being told by the respirations, and secondly, the pulse, then to depend so much upon the cornea. The cornea gives a fair idea of the state of anaesthesia, but it is never a safeguard against asphyxia or syncope. *Guttural sound* is a cue for the anaesthetist to draw the tongue forward to prevent it from crowding the pharynx. The pulse in this transient and incomplete anaesthesia may be very slow and soft without presaging danger, but when the artery becomes empty and the pulse waves become distinctly separated one from another, the danger point from embarrassment of the heart is near.

To keep within the bounds of safety, the anaesthetist who is inexperienced must be instructed to withhold the anaesthetic, extend the head, draw the tongue forward and leave the nostrils free from obstruction on the very first appearance of any unnatural behavior of the respirations or pulse, even at the risk of annoying the operator; and should the respirations cease entirely artificial respiration must be induced instantly. No time must be lost by giving medicaments, as artificial respiration is most important. The best method of restoring the respiratory function is to press the foot into the abdomen firmly and deeply, but not harshly, at first three times per second, and then oftener if these fail. Care must be taken not to obstruct a spontaneous inspiration that might be taken while these exercises are being done. Simultaneously with these manœuvres, others are engaged in extending the head, withdrawing the tongue, releasing

the restraining ropes, harnesses, belts, etc., and, as soon as possible, the patient should be rolled to the opposite side to prevent blood stasis. A medicinal dose of strychnia may be given hypodermically. Inhalations of ammonia I have found to be harmful. When these means fail in the horse, little else can be done—the patient is dead. In the dog swinging the body to an fro from the hind legs, rubbing and slapping the body is sometimes effectual after artificial expansion of the thorax has failed. Artificially induced respirations come first in resuscitating patients overwhelmed with an inhaled anæsthetic, the others are subordinate. As long as the heart still beats, no matter how feebly, there is still hope of exciting the respirations into activity, but when the heart ceases to beat, I fear we have but little chance to revive our overanæsthetized patients. It is, however, only rare that the heart is the original mischief-maker, and when it is, the patient is at once beyond hope of resuscitation.

When one of these short operations has been completed the restraint apparatus is removed and the patient is allowed to lie stretched out until it will react to the loud clack of a strap across its rump. It can then stagger to its feet with a little assistance, and, after a few uncertain steps, soon regains its equilibrium. Depending upon the duration and depth of the anæsthesia, this is from fifteen to forty minutes after the last bit of anæsthetic was given.

Thus far I have endeavored to show the kind of subjects that can be anæsthetized with safety, and the general plan of administration used in our clinics. With few variations in the apparatus used this is a fair description of the prevailing American customs. In conclusion, I desire to repeat that it requires no especial skill or knowledge not possessed by any veterinarian successfully to handle respiratory anæsthesia in healthy animals when the operation is of short duration. We find that veterinarians who adopt respiratory anæsthesia in the general plan of these minor operations soon use it to the exclusion of all other methods, and, besides, they soon become more proficient surgeons as well as expert anæsthetists.

Second Group.—The second group of patients presents the

surgeon with an entirely different problem. In this group we include animals more or less enfeebled by the disease for which the operation is to be performed, and all those afflicted with diseases requiring long, drawn-out, sanguinary operations. Among these are poll-evils, fistulæ of the withers, septic podotrochilitis, carcinoma of the eye, mammæ or penis, actinomycomata, scirrhus cords, large tumors, wounds with visceral complications, thecal abscess of the fetlocks, and others too numerous to mention. In these cases, we miss the aid of the expert anæsthetist. The broadest knowledge of anæsthetic drugs and their remotest behavior in the organism, coupled with skillful handling that can only be learned by wide experience, is absolutely essential to bring these subjects safely through these operations and the post-operative convalescence. It is in these operations that respiratory anæsthesia has proved such a hazard to veterinarians who have practiced it without trained help. In these long operations it is inconvenient unless an anæsthetist in whom the surgeon has implicit confidence is employed. In fact it is so hazardous and inconvenient that veterinarians seek refuge in all sorts of substitutes that only stupefy their patients. But these substitutes are not anæsthetics, they are only subterfuges. They do not answer the purpose of a real anæsthetic from any standpoint, and the only reason they are used is found in the fact that respiratory anæsthesia has been found dangerous in the very class of operations in which it most needed.

Our death-rate from anæsthesia, and during anæsthesia, in the first group of patients has been low, but in this the second group it has varied in strict obedience to the skill displayed in the administration. In our clinics, where a more or less skilled anæsthetist is always available, the mortality is not high—in fact, it is very satisfactory; but when it becomes necessary to operate in the rural districts, where there is no trained help, the death-rate is appalling. An anæsthetist at the Mercy Hospital, Chicago, U. S. A., has anæsthetized 45,000 patients without a single death during anæsthesia, and, while such a record is worthless until it includes the post-operative history of the same patients, it shows that veterinarians are far behind surgeons of human beings in

the handling of respiratory anæsthesia. In animals there are no statistics at hand from which the danger or safety of anæsthetics can be determined. I am, therefore, compelled to report only my own observations, and from these I have learned the lesson I am endeavoring to report—that is the danger of leaving the administration of respiratory anæsthetics for long, serious operations to untrained hands, and the relative safety of leaving it to the very same hands for short, simple operations. In short, the relief from this unfortunate situation which prevents us from resorting to inhalation anæsthesia where it is most needed will be found in the expert anæsthetist. I have always encouraged my students to practice respiratory anæsthesia, soundly condemning all other kinds of general anæsthesia, in order that we might develop more experts among us.

I shall now describe two methods of administering respiratory anæsthetics for serious operations that have proved the safest at my hands.

First Method.—An animal about to be submitted to a serious operation is conditioned into as healthy a state as possible by grooming, cleaning, feeding, exercising, etc. The volume of the intestinal contents is reduced by careful feeding, and food is withheld just before the patient goes to the operating table. The stomach should be empty.

As chloroform, although the most effectual drug for all animals, is entirely too toxic to be administered alone through a long operation, we resort to (1) a *preliminary anæsthetic*, (2) the *anæsthetic proper*, and (3) a *terminal anæsthetic*.

As a *preliminary anæsthetic* we administer chloral hydrate *per os*. Thirty to forty grammes dissolved in a litre of hot water is given as a drench one hour before the operation. Chloral given *per os* on an empty stomach gives a fairly uniform action. It is always safe and may be depended upon to do all that is required of a preliminary anæsthetic.

As the *anæsthetic proper*, we administer chloroform with a sponge and a canvas cylinder. The canvas cylinder is 1 foot in diameter and 18 inches long, closed at each end with a tobacco-pouch string. One end is drawn over the nose, drawn

tightly and fastened to the halter to prevent slipping off. Through the other end the sponge containing 30 c.c. of chloroform is placed against the nostrils. If a state of anæsthesia is not promptly produced another 30 c.c. is added to the sponge. The free end of the cylinder is held shut with the tobacco-pouch string or with the hands. As soon as the reflexes are well under control the cylinder is folded back so as to expose the nostrils, and the work of maintaining a satisfactory state of anæsthesia is begun by administering the terminal anæsthetic composed of equal parts of alcohol, chloroform and ether. This is administered through a towel laid over the nostril. The part immediately over the nostril is kept well soaked with the mixture. Air is allowed to pass freely through the undermost nostril. If the patient is obstinate we advise against the second use of the bag, but recommend that the undermost nostril be closed and results patiently awaited from the administration of the mixture through the towel. When an exceptionally profound state of anæsthesia is desired, as, for example, when a deep state of relaxation of the musculature is essential, pure chloroform may from time to time be dropped into the towel instead of the mixture. In this manner we seldom poison a patient by erratic delivery, and while the state of anæsthesia is not as profound as some would desire, it is usually sufficient to enable one to perform almost any veterinary operation. Shock from slight anæsthesia is not common, but when it is possible to block the reflexes by cocainization of a nerve-trunk I advise that this be done. It was Crile (Cleveland, Ohio) who demonstrated that the brain is continually being bombarded with impressions from the seat of the operation in spite of even very profound anæsthesia. If this explains the cause of shock after prolonged operations we, too, should resort to nerve-trunk cocainization whenever the seat of operation is conveniently located. In small animals we use this same general plan, but administer chloroform with much greater care as regards regular and decisive delivery, as these animals are more susceptible to overdosing than the large herbivora. For dogs especial apparatuses are handy but not essential. Ether is more fool-proof in small

animals than chloroform, and should be chosen by inexperienced anæsthetists.

Second Method.—The second method of administering respiratory anæsthetics for serious operations is one I shall recommend with great caution, because it has only recently been introduced into our clinics. It is the *endotracheal delivery* which differentiates it from our old plan. The other features are analogous. We administer the preliminary anæsthetic of chloral, and then deliver the anæsthetic proper and the terminal anæsthetic into the trachea with an atomizer. The rubber tube entering the atomizer is attached to a foot-bellows, the bottles containing the anæsthetics are placed into a small wooden box containing also an electric incandescent light to raise the temperature of the liquid, and the delivery tube is placed into the trachea through the uppermost nostril.

The foot bellows agitates the warmed liquid and delivers it vaporized directly into the air passages. We deliver pure chloroform until anæsthesia is produced, then shift the delivery tube to a bottle containing the terminal anæsthetic of alcohol, chloroform and ether, also contained in the wooden box. We have used this crude apparatus with such splendid success that it seems worthy of improvement. Patients fall rapidly and safely into a surgical anæsthesia, and the exact amount of vapor delivered can be determined. There is none lost in the surrounding atmosphere.

The delivery tube can be very easily placed into the trachea in large animals. In small animals the opposition makes the method less inviting; and, as in human beings, it is necessary first to bring about anæsthesia with the face-mask, and then pry the mouth open and deposit the tube. This hindrance leaves it hard to recommend for dogs and cats.

FATALITIES AND OTHER UNTOWARD SEQUELÆ.

Serious results from prolonged anæsthesia are due chiefly to oversaturation—the patient is poisoned. If overdosed patients

survive the operating period, they may even die afterwards or produce havoc by falling into a more or less serious state of delirium. *Chloroform* delirium supervenes on long sanguinary operations. The unfortunate subject perspires copiously, rolls its eyes, fights with all-fours and makes futile attempts to rise. If it finally regains the standing posture it lunges forward, presses the head to the wall, and falls about entirely oblivious to its surroundings. These manœuvres are, of course, disastrous to the seat of operation. Ligatures slip off, sutures are torn, and, in fact, general havoc to the wound results. This unfortunate sequel is often the unhappy end of an otherwise splendid operation where accurate dosage is ignored. It occurs in different degrees of severity in strict obedience to the amount of chloroform consumed. Some end fatally, some die from wound complications, while others recover after a few hours, little injured by the ordeal through which they have passed.

Pneumonia, I have found, seldom follows chloroformization without some other influence. Embolism and the enfeeblement following the operation are more to be incriminated than the chloroform. When influenza is prevalent there is more danger, but I have never seen it follow chloroform anæsthesia where these added influences do not exist.

Heart failure is a rare accident where ordinary care is exercised to avoid susceptible subjects. With me it has occurred chiefly in animals affected with heaves, laryngeal hemiplegia, obesity and senility. An aged fat horse leading an idle life must be anæsthetized guardedly. Reflex syncope in which the amount consumed plays no part has occurred twice in my experience. These two animals (horses) died suddenly at the very beginning of the administration. Both of these animals were fat and lacked vigor.

Asphyxia is the usual form of death during anæsthesia. Due either to erratic dosing or to overdosing, the prevention is found in keeping the amount consumed as low as possible, delivering the vapor regularly, and in watching incessantly for unnatural respiratory movements.

I have experimented somewhat with the *intravenous delivery* of both ether and chloroform, but have thus far been unable to bring about a satisfactory state of anæsthesia without endangering the patient's life from overdosing. It is, however, evident that there is still some justification in experimenting further with this method. We need an apparatus that will deliver a regular flow and that will keep the anæsthetic at a uniform temperature. With this provided for we may yet decide upon this method of administering anæsthetics to animals to the exclusion of all others.

SUMMARY AND CONCLUSIONS.

(1) For slight anæsthesia suitable for short operations the respiratory delivery is safe even in the hands of untrained anæsthetists.

(2) For the profound anæsthesia required for serious and long operations, respiratory anæsthesia is safe only in the hands of experts.

(3) The most discouraging part of respiratory anæsthesia for animals is the difficulty of regulating the dosage. We need an apparatus to automatically measure the vapor delivered and consumed by the patient.

(4) For profound anæsthesia of considerable duration, the best way to keep within the limits of safety is by administering a preliminary anæsthetic of chloral, followed by chloroform, and then maintain the narcosis with a terminal anæsthetic of alcohol, chloroform and ether.

(5) Despite profound anæsthesia exhaustion of the brain follows serious operations. This may be prevented by blocking with cocaine the nerve trunks which lead from the seat of operation.

(6) The endotracheal delivery of respiratory anæsthetics is worthy of a trial. It is a step in the direction of dose regulation suitable for animals.

(7) Intravenous delivery of ether and chloroform is unsafe with the apparatuses we now have for their administration.

NEW RESEARCHES ABOUT ROARING IN HORSES.*

REPORT BY DR. H. A. VERMEULEN, UTRECHT.

These reseraches have given me the conviction that:

(a) In the horse the thyroid gland can be involved in the process of illness, of which the paralysis of the larynx on the left side is the most obvious symptom.

(b) The nervous diseases which causes the laryngeal hemiplegia in the horse, should it ever be primarily peripheral, does not remain so, but in chronic cases central alterations may be indicated.

(c) The above-mentioned nervous disease is not limited to the left recurrent nerve, but is a proceeding process which attacks the whole motor system.

It is generally known that there are bacterial and chemical toxic substances which attack the nervous system; of these canine madness, lockjaw, diphtheria in man, strychnine and lead are examples, to which many others may be added. It has also been known for a long time past that bacterial and chemical toxic substances may bring about symptoms of degeneration in the left recurrent nerve of the horse, which is followed by paralysis of the larynx on that side. Every veterinary surgeon has experienced that roaring may occur after strangles, and after infectious pleuropneumonia, and in the course of saturnism (chronic lead poisoning).

It is about twenty-five years ago that the first researches concerning the influence of the extirpations of the thyroid gland on the nervous system were published. In 1888 Albertoni and Tizzoni found symptoms of degeneration in the peripheral nervous system after thyroidectomy; later also central alterations have been indicated in such cases by Rogowitch and Stieda. Waller

* Reprinted—Tenth International Veterinary Congress, London, 1914.

had seen in 1910 that the process of degeneration and regeneration in bruised nerves has a slower progress in thyroprive rabbits than in normal ones. I have found that in the horse also symptoms of degeneration in peripheral nerves arise after extirpation of the thyroid gland. In my preparations an increase of connective tissue and a winding course of the axones are distinctly perceptible.

In the first place we may conclude that in the horse also the thyroid gland has a physiological influence on nervous organisms.

In the second place I would call attention to the fact that a long time ago in human pathology it was observed that a disturbance of the function of the thyroid gland often remains after certain infectious diseases, and afterwards that alterations in the histological construction of that organ may be found in people who have died of quite different diseases. Roger and Garnier have produced the condition in mammals experimentally, *especially after infection with streptococci; they have found extreme alterations of the microscopic construction of the thyroid gland*. De Quervain and Sarbach observed total degeneration of the thyroid parenchyma in people who had died of infectious diseases and certain forms of pneumonia. The symptoms which may be seen in the microscopic preparations of such thyroid glands are:

(a) Proliferation and disquamation of the epithelium which lines the follicles.

(b) Alteration of the colloid substance and decrease of it. Only in chronic tuberculosis of man an increase of connective tissue may be seen. The same I have found in the cow.

I have seen similar symptoms as de Quervain and others have observed in man in thyroid glands of several kinds of animals,* in a cow which had died of septic metritis, in another with chronic tuberculosis, in dogs which had had distemper, and also in horses which had suffered from strangles (streptococci infection) or from infectious pleuropneumonia. With respect to the latter I observe that these are the very diseases which often are followed

*On examination of a guinea-pig which had died recently in the laboratory of Professor de Jong, from a streptococcal infection, I found the thyroid gland totally destroyed.

by roaring. Finally, I have examined the thyroid glands of twenty-one horses in which the hemiatrophy of the muscles of the larynx on the left side was to be seen in different degrees of development; as for the rest they seemed quite normal. Of three horses the thyroid glands were cystically degenerated; of the others the follicles were for the greater part small; the quantity and also the quality of the colloid substances were frequently altered; the epithelium showed all the symptoms of degeneration—in many of them it had even disappeared in several spots; and the walls of the follicles consisted partly or entirely of connective tissue.

As for the second question, former examiners, Fleming, Thomassen, Günther, junior, and others, have published that in horses with laryngeal hemiplegia symptoms of degeneration can only be indicated in peripheral branches of the vagus; Thomassen especially has energetically asserted that the nervous disease which causes roaring in the horse arises from a peripheral degeneration of the recurrent nerve *which never proceeds in a central direction*. In two cases of chronic laryngeal hemiplegia in the horse I have found a very distinct lesion in the posterior third part of the nucleus ambiguous on the left side from which the left recurrent nerve takes its origin. In one case I found that the quantity of cells of the dorsal motor nucleus of the vagus was considerably less than in normal preparations. If in the latter, in preparations in which the nucleus has reached its largest size, 90 to 100 cells in each of them are found; in the former, in corresponding preparations 60 to 70 cells may be counted.

In the third place I put the principal question: Are only vagal branches attacked by the nervous disease which causes the laryngeal paralysis on the left side in the horse? It must be affirmed that there only has the process of degeneration got such a considerable extension that up to now clinical symptoms only from this side are observed. Nevertheless, I will remark that in very chronic cases clinical symptoms from other sides may often be seen. Several times I have observed in horses which had roared for a long time slight symptoms of paresis of the left facial

nerve, sometimes of the left oculomotor nerve, even in one case of both, and at the same time of the abducent nerve on that side. A few weeks before its death I had occasion to see the famous Oldenburgian stallion Roland, which had roared for at least fifteen years. The horse was suffering from a very complicated general disease of the motor system which had not only extended in the cerebral part, but also in the spinal part of the nervous system. Once I prepared the masticatory muscles on both sides of a roarer; on the left side these muscles were distinctly less developed than on the right. The horse had an irreproachable set of teeth. I mention this because illness of the teeth in old horses often occur and these may be the causes of an atrophy of the masticatory muscles on one or on both sides. Microscopical studies have taught me that in cases of chronic laryngeal hemiplegia in the horse symptoms of degeneration may be found in most bulbar motor nuclei and also in different peripheral nerves. I hope to get a chance to demonstrate this at the Congress with projections made after my preparations.

In my opinion, the paralysis of the left side of the larynx in the horse must be considered the most obvious symptom of an extensive nervous disease which attacks motor nerves and their centres. This nervous disease is an intoxication, in a few cases caused by mineral or vegetable venomous substances, generally by toxic substances produced by bacteria or by autotoxins; the latter get into the circulation of the blood by an insufficient function of the thyroid gland. The fact that among our domestic animals this disease is only found in the horse may be explained by the following circumstances:

(a) This animal can suffer from infectious diseases which never occur in other animals (strangles, infectious pleuropneumonia).

(b) The specific bacteria attack at the same time the parenchyma of the thyroid gland, causing considerable destruction.

(c) In the horse products of metabolism have other characters than in other animals.

(d) In the horse the thyroid gland is often in less favorable

condition than in other animals, as is more elaborately shown by my paper, "Das Kehlkopf Pfeifen beim Pferd," A. Oosthoek; Utrecht, 1914.

The reason that toxic substances exercise their noxious influence in the highest degree on the larynx may be explained by the fact that the muscles of this organ, except one (*musculus crico-thyroideus*) receive their motor nerve-supply from one nerve only, the recurrent vagal nerve. Physiological and anatomical reasons why only on the left side the consequences of this nervous degeneration are so distinctly observed are easily found. The muscles on the left side of the larynx lose their electrical irritability sooner than on the right; if we prepare them accurately on the two sides and we compare them, we often may observe a difference in the development which is always to the disadvantage of the left side. In horses the arterial system of the left side of the neck is also frequently distinctly less developed than on the right. In many cases the thyroid gland in the horse gets its blood from one artery only. Such physiological and anatomical relations may be hereditary; and apart from practical grounds which plead for the possibility of this disease being hereditary, and which are also mentioned in my above-named paper, it is on these considerations that I consider the laryngeal hemiplegia in the horse to be possibly hereditary. Moreover, we must not forget that the left recurrent nerve really makes a longer and a more difficult circuit than the right one, because the left takes its retrograde way around the aorta, while the right turns around the costo-cervical artery.

DR. BRENTON MEETS TITLED VETERINARIAN FROM EGYPT—While in London, Dr. S. Brenton enjoyed the society of Dr. Jacques E. Aghion, Bey, of Sakha, Egypt. Dr. Aghion, who frequently writes articles for the REVIEW, is veterinarian to the State Domains, and was titled by the Khedive, and privileged thereby to add Bey after his name, a mark of distinction and honor in Egypt. Dr. Brenton enjoyed his visit with him very much.

WHOLESALE HANDLING OF BOVINE TUBERCULOSIS IN COLORADO.

BY W. W. YARD, STATE VETERINARIAN, DENVER, COLORADO.

One of the richest men in the State of Colorado, owning and living on one of the finest country homes in the United States, consisting of over six thousand acres of land, has been for four years farming many hundreds of acres, as well as feeding many beef cattle and hogs.

He had built up a herd of Holstein dairy cows of some 700 head, sending about \$210 worth of milk and cream to Denver every day.

About one and one-half years ago he went to Illinois and shipped out, as he supposed, 156 cows for the dairy, all having to pass the T. B. test. While in transit over the railroad, some twenty died, supposedly of pneumonia.

It had been reported to the Board of Health of the city of Denver that some of the dairy herd had tuberculosis, as some of the hired men had seen it in cattle butchered for the farm's consumption. About a year ago the city of Denver quarantined his milk from Denver, but this prince of finance had pull enough to have the city raise the quarantine. As one at a time the cattle kept dying, one of my deputies was called to determine the cause. Two or three post-mortems showed they were dying of tuberculosis so he advised that they all be tested, which was done, and 96 reacted. These were quarantined to be destroyed but after some six weeks the same prince of finance flooded the country with bills of an auction of 1,000 healthy Holstein milk cows, to sprinkle them amongst the poor farmers of not only Colorado, but all over. The auction was advertised for Monday, October 18.

On the Friday before I called on the prince and informed him he could not sell one unless it passed the test made by his veterinarian, who fortunately was one of my deputies.

On Monday I quarantined his cattle and hogs so that the few head that had been sold were all returned under the quarantine and I ordered the 1,000 tested. The first day's temperature showed such a fluctuation that we knew the cattle had been doped so I employed a student of the State Agricultural College and put him over the cattle as a guard for 46 days.

To check up the cattle as each one was numbered by a metal tag in the ear, to see that they were not doped with tuberculin.

In October, 1913, five or six charts were sent to me to file in my office of the cattle which he had shipped, with the cattle. Upon examination of the charts one could tell that they were forged, for out of some 156 head of cattle shipped on one chart there was only 6/10 difference in any one animal before and after inoculation. These temperatures were figured by the President of the State Agricultural College. The owner of these cattle bought them from James Dorsey, of Gilberts, Ill., who guaranteed the cattle to be free of disease and that he would give 60 days for the cattle to be retested in with an agreement that if any reacted the purchaser and seller would stand the loss together, with the result that 156 were tested and 96 reacted. When I examined the cattle after placing the quarantine a number were in pasture, skin and bones, so far gone they lay on the sternum, with neck extended, nose on the ground, eyes closed, dying by inches. Two days later two died and it was found the maxillary glands were full of tuberculosis degeneration, with the *pearly disease* of the intestines.

At the expiration of 46 days I had the cattle separated in bunches 1, 2, 3, 4, 5, 6.

Three dairy barns at a time were cleaned and disinfected and bunches 1, 2, 3 put in them and given the interdermal test. Then these barns were again disinfected and numbers 4, 5, 6 were also tested, all reactors separated and tested under the same conditions with the subcutaneous test. All reactors with both tests were cut out and ordered shipped to the U. S. Inspectors at Denver for autopsy. All suspects were segregated for another 46 days; by this time out of a milk herd of 365 cows there was left 85 suspects and non-reactors.

In order that this firm might not lose all its trade, as the Brown Palace Hotel, the Denver Club, Country Club, etc., due to the city of Denver's Board of Health now having quarantined the milk when I quarantined the whole herd, I was asked if anything could be done so that the milk could be treated and the public health still be protected. I suggested that the milk be pasteurized under the supervision of the guard from the Agricultural College, and this was done until after the retest.

During this time my attention was drawn to about 1,600 hogs, many of which had been allowed to run all over the place after the cattle, so I then quarantined all hogs until they were tuberculin tested.

By this time the second subcutaneous test was due on the suspects and non-reactors which, when the testing was completed of all cattle, I condemned 605 Holstein milk cows, in which every one showed the lesions to such an extent that in many of them the owner had to pay for the tanking—the average reactions being 52 per cent.

After the cow testing was completed and all reactors removed I started the testing of the 1,600 hogs, which resulted in 1,350 reacting, all being sent to be slaughtered under U. S. Inspection, they running 77 per cent. actual condemnations; being a slaughter of \$75,000 worth of stock.

In November, 1913, the U. S. Live Stock Sanitary Association met in Chicago, at which I took all the fraudulent charts, with the charts of tests of 1,004 head, made under my orders and the U. S. Government post-mortem findings of 605 head ordered killed. This was reported to the State of Illinois and a handwriting expert swore that all the charts were temperatures filled in by one handwriting and signed by another. Upon my return to Colorado I quarantined all dairy type and breeding cattle from Illinois except those tested under Dr. O. E. Dyson, State Veterinarian.

About November 30, 1913, I quarantined 52 head of Dorsey cattle at Meeker, Colorado, and upon test found 14 reactors. At

La Veta, Colorado, 8 were found out of 24 head as reactors; all shipped to Denver or Pueblo on U. S. post-mortem.

I have been on the lookout ever since, and on August 22 found 110 head of Holsteins in the northern part of the state very suspicious, from Ohio, in which they are supposed to be tested, but one has died in the last week, rotten with tuberculosis, which is supposed to have passed the test. They will be tested when the 42 days are up, but whether I am the State Veterinarian of Colorado or not the fight against tuberculous cattle and use of virus will go on, as I can expose those who have them and any sanitary officer who fails to do his duty.

DR. S. J. WALKLEY.—That the executive board of the National Association Bureau of Animal Industry employees acted wisely at their St. Louis meeting in voting to send Dr. S. J. Walkeley to Washington, D. C., was evidenced in a remark made by Congressman Lobeck when he recently addressed a meeting of B. A. I. employees at South Omaha, Neb. He stated that Dr. Walkley was the personification of consistency, and complimented our organization on having so able a gentleman to champion our cause at the capitol. At the hearings before the committee on agriculture on the Lobeck Bill, H. R. 9292, Walkley took a prominent part. He made it clear to the committee that the bill is not intended to effect the employees of the meat inspection forces exclusively, but includes the forces engaged in meat inspection, quarantine division, field inspection, animal husbandry, dairying, export and import inspection, eradication of hog cholera, dourine, glanders, Texas fever tick, sheep scab, cattle mange, tuberculin testing—in fact, any employee in the United States Bureau of Animal Industry whose designation corresponds to those mentioned in this bill. Dr. Walkley has worked incessantly for all classes of employees and has never shown favor to any particular class. The delegates at the Denver convention should re-elect him to the position he has filled so well during the last year. He is the right man to again go to Washington—he is thoroughly familiar with the situation—has gained a large acquaintance among the congressmen and senators, and if he will consent to become our national secretary for another year, there should not be a dissenting vote against him.—(*The Inspector.*)

VASOCCCLUSION: A PROMISING NEW METHOD OF ANIMAL STERILIZATION.

BY O. W. BARRETT, PHILIPPINE BUREAU OF AGRICULTURE.

For some five years the veterinarians and live-stock raisers of the world have been more or less interested in the possibilities of improved methods of castration. Vasectomy was for a time thought to be a solution of the difficulties with the old orchotomy practice, which, in tropical countries, is always a rather dangerous operation.

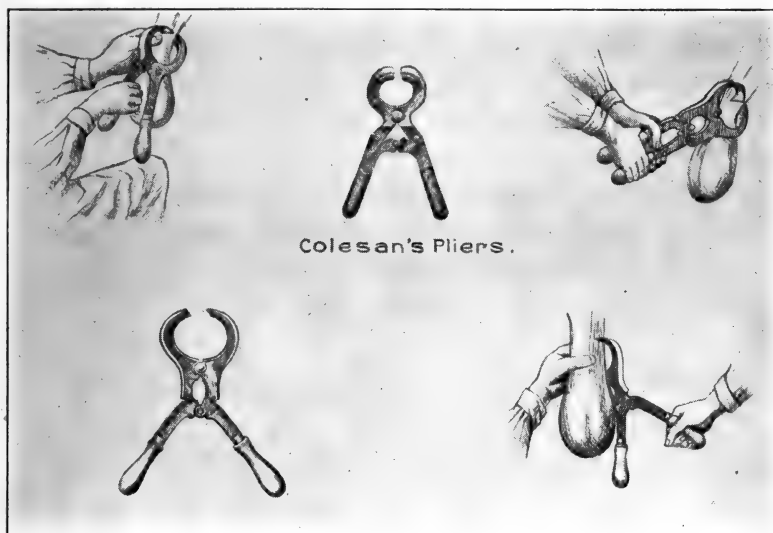
After vasectomy came vaso-ligation—a single or double tying of the vas deferens—and this operation has many advantages; however, both the bisection and the ligation of the vas necessitate the opening of the scrotum, always a serious risk wherever wound-infesting maggots and tetanus are in evidence. The old “bistournage,” or double-turning method, which is still practiced to a limited extent on rams and bulls, avoided the traumatic troubles (if the operator made a lucky “tie-up”), but was too tedious and even less humane than any of the others.

Then, a year or two ago, sterilization without castration was heralded as a highly scientific way of heading off Nature in the primal purpose struggle; the French found that cats and dogs could, under laboratory conditions, be rendered sterile, at least temporarily, by either the X-rays or radium emanations. We shall hear more of this discovery, and it may eventually become of the greatest importance in solving some of the world's gravest “social problems”; at present, however, the stockmen are not directly interested, for obvious reasons.

Finally, the new method, for which the writer proposes the term *vasocclusion*, has come as the simplest, cheapest and least dangerous method of all. It appears that Dr. Napoléon Berdozzi, of Italy, first made it public. Although little or nothing seems to have been done, even experimentally, with it in America, it is coming into use in Europe, and even in Costa Rica Dr. Sylvio has carried out the whole idea on a perfectly practical

basis and published some very interesting notes on the technique.*

The operation consists in occluding the vas by strong pressure with a special pliers, or forceps, having double action, wide-mouth jaws. The "cord" is simply crushed *from the outside*. For greater surety, Dr. Sylvio occludes the vas in two places—



Colesan's Pliers.

first close to the testicle and again as high as convenient; obviously, however, the higher occlusion should be made *first*. About six weeks are required for complete absorption of the gland. Dr. Sylvio has no difficulty in applying this method to bulls, rams, bucks, stallions, deer, dogs and even pigs, always with perfect success.

Veterinarians can take advantage of this method to render draft animals sterile without desexing them, by leaving the blood vessels intact and occluding only the vas itself the gland would still be able to supply the undoubtedly beneficial alexins, secretins, hormones, etc., to the blood stream, thus rendering the animal more resistant to diseases as well as healthier and stronger.

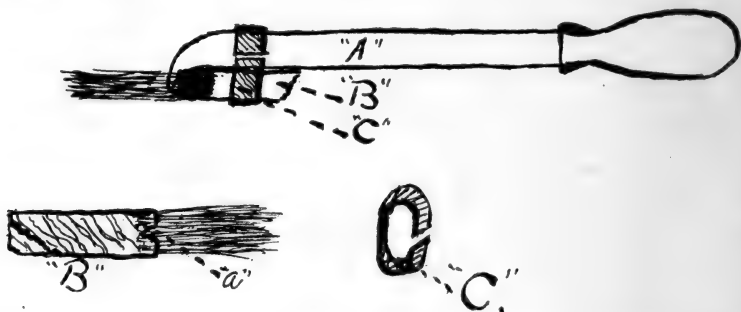
* Boletín de Fomento, No. 5 (1913); San José, Costa Rica; pp. 345-352.

AN OPHTHALMIC MALLEIN EYE DROPPER.

BY WILLIS WILSON, D.V.S., DAYTON, WASH.

A small and inexpensive bit of equipment which will be found indispensable to the man who has a considerable amount of ophthalmic mallein testing to do.

By filling the dropper with mallein, which easily holds 10 to 20 doses, it may be squeezed out into the brush and placed into the eye, and any remaining in the dropper after the testing is completed may be returned to the bottle without being badly contaminated.



"A"—Ordinary medicine dropper with the point drawn out and bent at right angles.

"B"—Camel's-hair brush with a part of the quill cut off and a notch made in the end next the hair "a" for receiving the point of the dropper.

"C"—A small band best made from thin sheet copper about $\frac{1}{4}$ inch wide and bent around the dropper and quill of the brush. The opposing ends should not quite meet when the band is in place, which allows for its being squeezed together while it is off and will thus be made to fit quite snugly and act as a spring.

This apparatus can be made in 20 minutes by any man of ordinary ingenuity with the aid of an alcohol lamp and a pair of tweezers.

Its advantages over either the dropper or the camel's-hair brush are at once obvious.

DISTEMPER—ETIOLOGY AND VACCINATION.*

BY H. CARRE, CHIEF OF RESEARCH SERVICE ON INFECTIOUS DISEASE, ALFORT
VETERINARY SCHOOL.

Summary of Report by H. Carre.

Much still remains to be done in connection with solving the problem of the causation of distemper in dogs and the diseases which may be confounded with it upon clinical grounds. If the filterable virus is an established fact and beyond dispute (Carré, Lignières and Eiguène), it is nevertheless true that precise information is still required regarding the exact part played by it in the causation of the various lesions observed during the course of the disease. The specific nature of the *Bacillus bronchisepticus*, of Ferry and Torrey, is by no means established. The harmlessness of cultures when inoculated subcutaneously, the methods resorted to in order to produce the natural (?) form of disease, etc., warrant grave doubts being cast upon this organism as being the cause of a disease which is exceedingly contagious. The method of vaccinating by cultures of *B. bronchisepticus* does not appear to rest upon a very firm basis. Judgment is suspended until the results obtained by other authors are available. We may observe that we have been unable to find an organism corresponding to that described by Ferry and Torrey in seven dogs suffering from distemper.

DR. SHEPARD MAKES TRIP THROUGH SCOTLAND AFTER CLOSE OF LONDON CONGRESS—Dr. E. H. Shepard, Cleveland, Ohio, finished out the trip as scheduled, going to Edinburg and Glasgow, Scotland, and Manchester and Liverpool, and sailing from the Thames, coming home, came within 30 feet of striking a floating mine in the channel. It is comforting to get the assurance from the doctor that he "missed it" and is safe at home.

* Reprinted—Tenth International Veterinary Congress, London, 1914.

LAMINITIS.*

BY M. LIENAU, PROFESSOR AT THE SCHOOL OF VETERINARY MEDICINE,
CUREGHEM, BRUSSELS.

Summary of report by Professor Lienaux.

Laminitis, of which no one has as yet given a satisfactory definition, should be considered as a syndrome rather than a disease. The most characteristic lesions indicate different diseases: Chronic congestion and hypertrophy of the sensitive laminae, ostitis of the os pedis. The commonest symptoms of bilateral laminitis may be observed in a number of different diseases: Congestion and hypertrophy of the sensitive laminae, ostitis of the third phalanx in its various forms (superficial and deep, and in its final localization on the semilunar crest or the navicular bone), when these diseases affect both limbs and is very acute. The detailed description of each of these conditions would show that laminitis is in the nature of a syndrome, and the differential characters for each case would be indicated. Thus, the resting of the foot on the toe (podophyllitis, ostitis of the quarters, of the semilunar crest or of the navicular bone) or on the heels (podophyllitis and ostitis of the toe portion of the bone) or flat (when the lesions involve the whole foot to the same extent).

NEW YORK COLLEGE OF VETERINARY SURGEONS' GRADUATE DIES IN CALIFORNIA—Dr. A. R. Wiley, graduate of the New York College of Veterinary Surgeons, class of 1893, died at Corina, California, on September 11, 1914. Dr. Wiley was formerly veterinarian to the New Jersey Bovine Tuberculosis Commission, and for the past five years has been practicing at Corina, in Southern California. He was stricken with apoplexy on September 11, and died at the expiration of thirteen hours without regaining consciousness. He leaves a widow.

* Reprinted—Tenth International Veterinary Congress, London, 1914.

REPORTS OF CASES.

SOME INTERESTING CASES.

By FRANCIS ABELE, JR., Quincy, Mass.

WRY NECK.

(1) An article on "wry neck" in the *Chicago Veterinary College Quarterly Bulletin* for September, 1914, is very interesting, especially his treatment recommended by another doctor. The wry neck had been treated by straps holding horse against side of stall, and recovery as taking 3 to 6 weeks.

I recall a baker's horse, got cast, could not get up without use of slings and when up horse showed wry neck, as described. By pushing head to other side, the "kink" would straighten out. His halter rope was tied to one side of stall, his neck, back of poll to the other and a rope from one end to other on same side of stall held him quite firmly to side of same. He ate from a barrel, seemed comfortable at once and inside of one week's time was back at work.

Another case, a chestnut mare was turned out in small yard of 3 strands plain wire fence. She got colicky, down, with head under wire, neck showed swollen on one side, took medicine, got over abdominal cramps, trotted up to barn, set to eating.

Three days later she was down unable to rise, comatose. Placed in sling, her neck kinked one way of turning, but straightened when passed to the other side. Post mortem showed extravasation of a large pocket of clotted blood between the cervical muscles; several articular facets were broken. I wish to show here how dangerous it is to prognose on these cases. The one that seemed harmless, died. The one that looked serious, recovered speedily.

INJURED SPINES IN DOGS.

Very interesting studies could be made in fractured spines in dogs from most city practices. Here again diagnoses and prognoses often need a second guess. A dog may after a week or even 2 weeks' paralysis recover use of hind parts, others never do. Of course we seldom see the post mortems on those that recover. They would be the most interesting. A dog with a

22-calibre slug through spinal canal of 2 vertebrae, seemed bright and cheerful, dragged his hind parts about unconcernedly. The hole was so small that owners had not noticed it.

GLANDERS—A POINT OF LAW.

(2) One Jew bought a horse from another Jew on a Sunday afternoon about 5 p. m. Monday morning at 9 a. m. during the veterinarian's office hours he brought horse for examination. Horse was reported quarantined and killed by the state for glanders. Dealer refused to return cost of horse. Case taken to Superior Court and judge ruled that sale was not a lawful sale, hence law could not recover for buyer. This seems to imply that on Sundays a glandered horse can be sold with impunity in Massachusetts.

FRACTURE MANIFEST AFTER THREE DAYS.

(3) A market gardener took produce to market, put up horse in livery stable. All stalls were full. Horse stood in floor with others. When leaving, owner saw blood streaming from a wound on inside of thigh, called attention of livery man who claimed it was of no moment, and had stableman wash it. Told owner to take it along and work it. Three days later horse laid down, could not rise, sent for veterinarian. Complete fracture with dangling leg. Veterinarian recommended lawyer notify stableman. A week later saw horse in slings, leg dangling and bone protruding. Lawyer had not acted as yet. Should have said that first wound and later fracture were at one and the same spot.

ANOTHER MANIFEST IN FIVE DAYS.

A fire horse was kicked by another horse, bathed and exercised by self-ordained stable veterinarian. After about 5 days horse lay down, could not rise or be raised by local talent. A veterinarian called, raised foot almost to horse's back to convince those interested.

ENTERITIS IN A MONKEY.

By CRITTENDEN ROSS, D.V.M., New York, N. Y.

Was called to see a monkey which had been taken suddenly sick, and after the usual line of inquiry the following anamnesis was secured: The animal had been quite well on the previous

day (*i. e.*, he did not evidence any pain, and was in his usual spirits); he would attempt to eat anything offered him and had been fed some new corn by children playing with him. When the family arose in the morning they did not, as usual, find any feces about, and the little fellow showed signs of intense pain. Enteritis was diagnosed, and an enema of warm water and soapsuds was given, which was followed by the expulsion of hard balls of feces. A mild laxative was administered, and a hot-water bottle applied to the abdomen. Two and one-half hours later I called to see the patient, taking a stomach tube in order to give a high enema; this time he appeared much weaker, heart very rapid, and respirations fast and labored; there was some evidence of attempts at vomiting; the stomach tube was passed and effort made to evacuate the stomach, which was only partly successful. Another enema was given, but the animal died in a short time.

POST MORTEM revealed an intense inflammation of the bowel, which was most marked in the small colon; the mesenteric arteries were congested and a portion of the wall of the small colon was much thickened and showed signs of necrosis.

STRUCTURAL CHANGES RESULTING FROM OUTWARD DISLOCATION OF PATELLA IN A PUPPY.

By the Same.

It having been my privilege to have under observation an eight-month-old puppy affected with an outward dislocation of the patella existing since early puppyhood, I became curious to learn the structural changes resulting from the same. I later was granted, upon its death, the privilege of holding the post-mortem examination, which revealed the following: The femur had a distinct curve extending from the proximal third to the distal extremity, the patella was freely movable on the external surface of the femur, *i. e.*, laterally; the internal lateral femero-patellar ligament was not distinguishable; the articular surface on the distal extremity of the femur was only about two-thirds the size of that of the opposite limb; the groove at the distal extremity of the femur was scarcely noticeable as compared with that of the opposite femur; the anterior femoral group of muscles much atrophied. During the autopsy it was noticed that this puppy was a monorchid, the retained testicle corresponding to the side of the injured limb.

A THREE-LEGGED CALF.

By J. B. L. TERRELL, D.V.M., Dresden, Tenn.

I enclose photograph of a three-legged calf taken when four days old.

The left limb is entirely wanting; no scapula. It is a fully developed calf in every other respect.



This little bovine female has six teats, all the same size. She is now six weeks old.

DR. DUNPHY HIT BY AUTO—Dr. G. W. Dunphy, State Veterinarian of Michigan, known to every member of the A. V. M. A., had just parted from his old friend, Dr. Brenton, in Detroit, on September 11, when he was hit by an automobile at Michigan and Woodward avenues, and knocked down. The doctor received no serious injuries, but was painfully bruised and confined to his bed for more than a week. The profession extends its sympathy to the good doctor for the pain he has had to endure, and congratulates him on the fact that it was not serious.

SEVENTY-FIVE THOUSAND DOLLARS WORTH OF STOCK DESTROYED ON ONE FARM—Dr. W. W. Yard, State Veterinarian of Colorado, recently destroyed \$75,000 worth of stock, with tuberculosis, belonging to one man.

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

HEPATIC AND SPLENIC SARCOMA IN DOG [*W. W. Henderson, M.R.C.V.S., D.V.S.M.*].—Small sized airedale terrier dog had distension of the abdomen, which made it suspicious of ascitis, but on palpation revealed a great enlargement of the abdomen due to a firm mass, a large tumor. The mucous membranes were yellow, the dog had constipation, was weak and in emaciated condition which made the pendulous aspect of the abdomen more evident. The dog had been ailing for months and often put under treatment. Prognosis being very serious, the dog was condemned. As he was chloroformed the abdomen was opened and a large amount of fluid escaped. The spleen was exposed, enormously enlarged and nodulated. The liver was also enlarged. It weighed $6\frac{1}{4}$ pounds, the spleen 2 pounds. The omentum was covered with myriads of small tumor-like bodies. The neoplasms examined with the microscope proved to be mixed celled sarcomas.—(*Vet. Record.*)

HYSTERIA IN A MARE [*D Keir*].—Twelve-year-old hackney mare had her fifth foal. She was again served by the sire of the previous foals. The act went on satisfactorily. She was to be presented to the stallion the next morning, when she was found ailing. She was very uneasy and apparently in great pain. The head was stretched out and the tail highly elevated. All the muscles of the body were hard and tense and contracted with the least excitement. She ground her teeth persistently and salivated abundantly. Examination of the vagina revealed congested condition and the vulva was opening and closing as if there was a constant desire to urinate. Now and again a small quantity of urine was ejected. Pulse quick and irritable. The mare was put in a dark box with her foal, was given plenty of water, received no medicine, but left quiet. The symptoms gradually subsided and finally the mare was all right. The mother of this mare had similar symptoms two years before being served by the same horse.—(*Ibid.*)

FATAL POISONING BY EXTERNAL APPLICATION OF OIL OF TAR [*Ralph Bennett, F.R.C.V.S.*].—Eight-year pony had two or three bare spots on the skin. Fearing it might be mange it was decided to dress the animal all over with train oil. Instead of that, by error, oil of tar was used, about three pints in all. One hour after, the pony is in great pain, blowing badly, fell down and remained unable to rise again. He laid on his side, his four limbs stretched out and quite rigid, the jaws were tightly clenched, pulse imperceptible, there were twitchings of the muscles of the trunk, consciousness was quite lost, no corneal reflex. Free washing of the whole body with soap and water, douching with cold water, emollients to the skin, stimulants, all failed. The pony died.—(*Ibid.*)

URINARY SABULOUS DEPOSIT AND CATHETERIZATION IN THE CAT [*G. O. Rushie Gray, M.R.C.V.S., B.Sc.*].—Continuing remarks made by him on the same subject, the author records three interesting cases of cats which he treated—a Persian castrated male, another nine months old and an entire cat of three years. Besides the description of the symptoms and that of the treatment for the relief of these three animals, the author calls attention to the fact that in the first case he had to remove the obstructing material from the urethra as a kind of cylindrical casts, practically occupying the whole length of the canal. The second case brings out the fact that the age of the cat shows that the trouble is not peculiar to old animals, that in flushing the bladder with water not too much fluid must be introduced. In the third case, the author remarks that the subject was entire, with fully developed testicles, hence the error in saying that such urinary deposits do not occur in entire animals.—(*Vet. News.*)

PYRO-THERAPY IN CANINE PRACTICE [*By the Same*].—Remarks on the use of actual cautery in canine practice with mention of two cases of hip-joint disease in dogs which were successfully treated. The animals had been in great pain, were unable to put the foot on the ground, crying when the limb was manipulated, wasting of the hind quarters were characteristics. Both dogs were young adult, one a pet the other a sporting dog. After being kept under observation for a long time and unsuccessful anti-rheumatic treatment, firing was resorted to. After anesthesia of the parts, four or five punctures about 1 inch apart were made around the hip joint, the point of the iron penetrating until it reached the bone. Iodine was poured over the wounds

daily. They suppurated, granulated and after four days improvement was noticed followed by complete recovery after eight weeks.—(*Vet. News.*)

TREATMENT WITH AUTOGENOUS VACCINE [*R. T. Stirling, M.R.C.V.S.*].—Half-bred shorthorn cow picks up a nail with her foot; is quite lame. After a few days of simple treatment the leg is much swollen, and after a fortnight there are several suppurating openings at various points around the coronet. A probe introduced in same reaches the os pedis. A sample of pus is taken and sent to Research Laboratory, when in four days "six 1 c.c. phials of autogenous vaccine are returned—each phial containing 3,000 million organisms, being 1,000 of each of the three organisms isolated, viz.: *Staphylococcus pyogenis aureus*, a micrococcus of the *M. catharratis* type and a diphtheroid bacillus." Injections of $\frac{1}{2}$ c.c., 1 c.c. were made, five in number, beginning the last day of May and on April 10 all dressings were unnecessary.—(*Vet. Journal.*)

INTERESTING PARTIAL HYSTERECTOMY [*George Elmes, F.R.C.V.S.*].—Small Pekingese bitch, $2\frac{1}{2}$ years, at the time of whelping is uneasy. 1 c.c. pituitrin is injected, followed by another 30 minutes after. A dead puppy was delivered. One hour later another 1 c.c. is injected, and another puppy, apparently dead, is removed. He is dropped into a toilet pail containing cold water, revives, moves, gets artificial respiration and lived five weeks. Still another pup is felt through the abdominal wall. Three injections of 1 c.c. of pituitrin were given without signs of labor. An operation is decided. The bitch put to sleep. The left horn as far as the junction with the body of the uterus and the left ovary were removed. The puppy was in a putrid condition. Recovery was uneventful, except that the skin wound did not heal by first intention.—(*Ibid.*)

CUTLET BONE DEMONSTRATED IN SITU BY SKIAGRAM [*Guy Sutton, F.R.C.V.S.*].—Young West Highland terrier got the bone of a lamb's cutlet. Forty-eight hours after he vomits, seems uncomfortable and takes only milk. Bismuth is given in powder and ice to lick. Visited again, he is called, ran quite brightly, then stood still and made three or four steps in a perfectly straight line.

The history of the lamb's cutlet being brought out, small shreds of raw meat are given and well taken. Skiagram is then

taken and a large portion of the bone wedged in the oesophagus, immediately over the heart, is detected. Rubber tubing as probang was used, but the bone could not be displaced. Unsuccessful attempts to promote and obtain vomiting, the dog was destroyed.—(*Vet. Journal.*)

BILATERAL LUXATION OF THE LENS IN A DOG [*G. O. Rushie Grey, M.R.C.V.S.*].—Referring to the case alluded to in August last, the author describes the operation and the results obtained in the case. After careful preparation of asepsy of the instruments, the animal was put to sleep with morphine and chloroform and the operation performed on one eye with a von Graefe's instrument. After the incision, the lens was extracted, the eye well cleaned with boiled water, the eyelids brought together and maintained closed with one suture. This was removed the next day. The divided edges of the cornea had healed and the anterior chamber refilled. The suture of eyelids was reapplied and permanently removed on the third day. A dense opacity spread over the whole cornea, which did not subside except gradually with some little time. The dog which had been totally blind in both eyes, could see a little out of the one operated. The other eye was then operated and treated in the same way with the same results, the animal being able now to move without much inconvenience.—(*Vet. News.*)

FRENCH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

PARESIA OF FORELEGS FOLLOWS HEMOGLOBINURIA [*Mr. Letard*].—A Percheron stallion is taken with hemoglobinuria. The symptoms are characteristic and no error of diagnosis is possible. After proper treatment the horse the next day seems in perfect health. His temperature is normal, his appetite is good. But as he is taken out of his stall he manifests peculiar symptoms. His walk is such that the impression is that he has laminitis. Making him go forward he flexes the foot upon either fetlock, but more so on the left, pointing the fetlock forward to such an extent that it nearly touches the ground, as it happens in radial paralysis. Feeling his inability to rest on his plantar faces he raises his anterior legs alternatively, but even then seems unable to rest his foot on the ground and he stumbles.

threatened with a fall. These symptoms lasted for four days. They subsided on the off foreleg, which then recovered its normal function. The near leg remained affected longer, only the 11th day did the symptoms pass away. Work was resumed on the 15th day from the attack.—(*Bullet. de la Soc. Centrale.*)

FATAL COPROSTASIS IN A DOG [*Prof. G. Petit and Brune, Student*].—Seven-year-old dog is taken suddenly with obstinate constipation, which remained rebellious to all treatment. He has lost flesh and coat is staring, the eyes sunk in the orbits and by abdominal palpation the hard cylindroid mass, characteristic of coprostasis is readily detected. Previous to operating, castor and olive oil in equal parts are given in teaspoonful doses, morning and evening, with repeated tepid glycerine rectal injections. No result is obtained—only one very small passage of putrid hard feces taking place in two weeks. Death takes place before the dog could be operated. *Post-mortem.* Congestion of the omentum, intestines dilated with gases. The large intestine, with the coecum, from the ileum to the rectum is enormously distended, and contains matter of stoney consistency mixed with hairs. It weighs 3 kilogs. 599—and measures 11 centim. in diameter, while normally it is only 4 centimeters. All the other organs are healthy. There is no hypertrophy of the prostate.—(*Bullet. de la Soc. Cent.*)

TUBERCULOSIS OF THE MYOCARDIUM IN A CALF [*Mr. Ballon, Veterinary Director*].—Case observed at the abattoir in a male calf, scarcely two months old. He had generalized tuberculosis, with lesions in the bronchic, mediastine, left prescapular, hepatic and mesenteric lymph glands. The lungs, liver and kidneys were clear of lesions; there were three caseo-calcareous tubercles in the spleen. The heart, at its point, and in the thickness of the left ventricle wall, presented a whitish surface which looked like a lesion of measles. On section of the myocardium there was a tumor enclosed in the thickness of the muscular structure. The microscopic examination of the scrapings from this tumor, whose macroscopic appearance left no doubt as to its nature, revealed the presence of some acido-resisting bacilli and some of the caseo-calcareous tubercles inoculated to guinea pigs after trituration in sterilized water, gave rise to tuberculosis in due time. The other parenchymatous tissues were free from apparent lesions. It was a marked case of tuberculosis of the myocardium.—(*Bullet. de la Soc. Cent.*)

EVERSION OF THE BLADDER IN MARES [*Mr. Clement Theuriot*].—The author has observed this accident four times—in the first he reduced the prolapsus with difficulty, in two others he was called too late, the bladder was ruptured, with in one, prolapsus intestinal. In the fourth, it was to deliver a mare in which the reversed bladder formed a tumor as big as the head of a man, filling the vulvar opening and supported anteriorly by a penduncle as big as the fist. The foetus was delivered. But to reduce the bladder was difficult. In feeling it, feces were revealed through the walls of the organ, showing that the case was one of intestinal hernia with the bladder being the hernial sac. After pushing the vesical tumor back in the vagina, the foecal balls were squeezed in the anterior peduncular and the sac was empty leaving the bladder flabby and scarcely bigger than the fist. It was easily pushed back in its place, cleaned with warm salted water and the uterus washed with peroxide solution. But during the accouchement the mare had vomited and rejected food through the nose, she had a rupture of the stomach due to the violent abdominal contractions during labor. She died after a few hours.—(*Rev. Gen. de Med. Vet.*)

TUBERCULOSIS OF THE BRAIN AND SPINAL CORD [*Ch. Perard, Sanitary Veterinarian*].—At the arrival of the truck that brought her to the abattoir, an eighteen-months-old heifer in good condition, is found lying down unable to get up. After being killed a fracture or muscular rupture were looked for to explain her condition. There were none—but the visceras and annexed lymph glands were found with caseo-calcareous lesions in the lungs, liver and mesenteric glands. In examining the vertebral column there was found on a level with the sixth cervical vertebra, a hard tumor, within the spinal cord. This presented a rounded swelling as big as a nut, which on section presented all the macroscopic characters of bovine tuberculosis. In the cerebrum, which was asymmetrical and irregularly bosselated, there was found that the right hemisphere was bigger than the left and contained three big tumors, one situated in the anterior portion and the others in the posterior. These were also tuberculous. In the left hemisphere there was a small lesion of same nature.—(*Hygien. de la Viande et du Lait.*)

A SINGLE KIDNEY IN A CALF [*Mr. Gautier, Veterinary Director*].—This anomaly was found in a six-months-old calf, weighing 72 kilogs. This single kidney was situated on a level

with the sacrum. It had the shape of a horseshoe, with the branches turned forward, the biggest convexity of the organ corresponding to the toe being on a level with the origin of the iliac arteries. The kidney was lobulated, weighing 300 grammes and was as big as a fist. There was no external fissure which would indicate that it was two kidneys united by one of their extremities. There was but one renal artery rising from the aorta, three centimeters in front of the bifurcation of the iliacs. There was but one vein and one ureter.—(*Hyg. de la Viande et du Lait.*)

DEEP PUNCTURE OF THE FOOT IN A COLT—SUPPURATIVE ARTHRITIS—RECOVERY BY BIER'S METHOD [*L. A. Bichot*].—A six-weeks-old colt had a deep wound on one foot, made by one sharp tooth of an American fork. A probe introduced into the tract revealed a fistula between the wall and the os pedis. A few moist dressings were applied without results and an operation has to be performed. The caries of the os pedis was curetted, the fistula freely open, its bottom showed a big greyish granulation of bad appearance. This was carefully excised and then there escaped purulent synovia from the second phalangeal articulation. Bier's method was then resorted to: a rubber cord was applied in the middle of the canon, a compressive dressing with tincture of iodine and boric acid was applied. The rubber cord was taken off, morning and evening, for one hour. The dressing was changed every week. Recovery was complete after a month.—(*Rec. de Med. Vet.*)

FOOD ENTERED IN THE GALL BLADDER, DUE TO CANCER OF THE DUODENUM [*L. Marabail*].—Fifteen-year-old cow in good condition becomes suddenly ill. She has digestive troubles. Loss of appetite, no rumination, no defecation, 40 degrees 7 C. temperature. She has no colics nor tympanitis. Pressure on the right side gives rise to pain. Acute enteritis is diagnosed and treatment prescribed. After three days the animal has improved and apparently recovered after a week. A month later the same symptoms returned. The cow died during the night.

Post-mortem. Intestines empty. No acute enteritis is present. Liver is hypertrophied and yellowish. Gall bladder is very large and when it is open shows about two pounds of alimentary matters packed in. Round the duodenum there are five or six tumors as big as a hen's egg, they are lymphadenoma. Round them the intestine is thickened and contracted, measuring about

five or six millimeters only in diameter. Above this contraction the intestine is filled with food, which had accumulated and made its way in the biliary duct and into the gall bladder.—*Rev. Veterin.*)

BELGIAN REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

ELASTIC LIGATURES ON SMALL ANIMALS [*Mr. P. Stappers, fourth year student*].—A shepherd dog had two elastic ligatures round the lower jaw, back of the canine teeth. They gave rise to a circular wound which required free incision of the skin to permit them to be removed. The bone itself was undergoing necrosis. Cauterization with tinct. of iodine helped the cicatrization.

A small street dog with thick long hair had on the middle of the left swollen forearm a running fistulous sore which did not heal. An elastic ligature covered by the hairs was found, explaining the swelling, but not the discharge or the fistula. Incision of the skin exposed a small loop of fine wire which surrounded the bones of the forearm. It had cut through the skin first, and as its action stopped the cutaneous cicatrization, had taken place over it and there was left but a fistulous tract. The foreign body removed, the wound was dressed antiseptically and recovery followed.

A loulou dog had two rubber rings round two of his claws. They had to be amputated.

A lame kitten had a swelling on the forearm, where is a circular cicatrix. Incision of the skin over this exposed an elastic ring easily removed. Kitten gets well rapidly.

These, with a few more with similar conditions, are reported to illustrate the bad effects that may follow improper or unknown application of means of constriction, specially of elastic nature on small animals.—(*Annales de Bruxelles.*)

INTESTINAL PERFORATION BY BONE IN A DOG [*Prof. Rubay and Adjunct. Van Goidsenhoven*].—After some remarks upon the feeding of dogs, in which bones, entire or in small pieces, are mixed, and upon the accidents that may follow, the authors recall that of a pointer of great value, which had died suddenly and of which they were called to make the autopsy. They found

lesions of generalized infectious peritonitis, with sanious, chocolate effusion, having offensive odor, and about 2 litres in quantity.

Two centimeters from the end of the ileum there was a hole in which a piece of bone was engaged. The bone was like an articular head, irregularly triangular and sharp on its edges. Opposite the hole there was another one smaller. The history was that while in the country where he was trained, his diet consisted of brown bread, meat biscuits and water. When he was brought home a similar meal was given, made of kitchen remains, and the day after the dog was taken sick. It was at that meal that the piece of bone had been swallowed.—(*Ibidem.*)

MASTER HORSE SHOERS NATIONAL PROTECTIVE ASSOCIATION OF AMERICA.—From all parts of the United States, the master horse shoers gathered in New York City for the week beginning September 14th, making the Hotel Martinique their headquarters and meeting place. Their organization is now 22 years old, having been organized in Cleveland, Ohio, in July, 1902. Seven men were present at the organization, and their membership is now something less than seven hundred. A fine, hearty, whole-souled lot of men, who have learned the advantages of organization, exchange of ideas and good fellowship. On the evening of September 16th a banquet and dance was given to the organization at the Martinique by "The Nutmegs," the local organization of Brooklyn, N. Y., at which the wives and daughters of the members were present. Mr. Wm. J. Kent (manager of the New York branch of the Revere Rubber Company, manufacturers of the Air Cushion Horse Shoe Pad), acted as toastmaster, and was fully master of the situation. In addition to addresses by the members, there was some excellent singing by some of the daughters, which proves conclusively that the music of the anvil can be transmitted to the offspring. Altogether it was a very enjoyable affair.

HAS SECURED THE REVIEW FOR TWO YEARS IN ADVANCE—Dr. J. G. Forsyth, Duluth, Minn., says in renewing his subscription: "Enclosed find check for \$6, being two years' subscription for your valuable journal. I could not get along without it and take opportunity of securing it for the next two years; hoping that long life and continued prosperity follow you in your good work."

CORRESPONDENCE.

EUROPEAN IMPRESSIONS.*

The latter part of July we were in Paris. How one's preconceived impressions of persons and places collapse in the presence of the real. I was prejudiced against Paris, for what reason I do not know, and yet I enjoyed it the best of any city visited.

Paris is beautiful. Its parks and boulevards and its famous galleries and buildings, rich not only in works of art but in historical associations, appealed to me very much. It is essentially a Latin city and I was frequently reminded of Havana and other cities of Latin America.

The one "fly in the ointment" was the public flaunting of vice, not only by the women of the street plying their trade but by men as well. In no other European city was this noticeable.

Some of the principal streets were lined with petty gambling devices and frivolous amusements with all the gilt and tawdry glamour of a circus. I wondered as I noted the inferior size, dandified dress and effeminate appearance of the men on the streets of Paris if they were physically able to uphold the glorious record of Frenchmen of other days.

Another striking impression was the absence of games that called for physical exercise, no baseball, cricket or tennis, nothing but horse racing. Still Paris is not France and it is to those who labor and live upon the soil that all nations must depend for a physically vigorous people.

From Paris we passed over the beautiful rolling fields of northeastern France. The peasants were cutting fields of fine alfalfa and grass for hay. Patches of rye and wheat were beginning to grow golden for the harvest. It is difficult to imagine this beautiful farming region now devastated by war. The pleasant homes are blackened ruins; the wheat, rye and oats have furnished food for cavalry and artillery horses or tramped into the ground that has been saturated with human blood.

* Written for American Journal of Clinical Medicine and by courtesy of that excellent periodical on human medicine, a copy was sent to the REVIEW for publication.

From France we passed to the "lowlands" of Belgium and Holland. I was reminded of the familiar words of Caesar when he says: "All Gaul is divided into three parts, one of which is inhabited by the Belgians," and after reading of the heroic defense of Liege one also recalls his other statement that "of all the inhabitants of Gaul the Belgians are the bravest."

We had noticed many soldiers in Paris but supposed it was a normal condition. When we reached Belgium the movement of troops was pronounced. Even at the Hague, while visiting the Peace Palace, batteries of artillery went rumbling by.

In Rotterdam the streets were filled with sturdy Dutch. The young, excited, the older anxiously watching the bullets. The reserves were flocking to the colors, among them were fair-haired, rosy-cheeked boys, no taller than the rifles they toted. Officers were commandeering horses and the farmers' wagons were left useless in the streets.

Returning from a visit to the National Serum Institute we found our hotel had been taken for military headquarters. It was interesting to note the effect of war conditions upon the various tourists. Some thought it a joke, others wanted to appear as heroes and assert their "rights as American citizens," while the philosophical made the best of the inconveniences of war.

We sailed from the Hook of Holland and as we steamed into the harbor of Harwich, England, a fleet of scores of destroyers with steam up were tugging at their anchor chains like dogs in the leash, eager for the chase. The scene impressed one with Great Britain's naval power and its readiness for action.

All London, and probably all Britain, were laboring under a great strain. No one seemed to doubt that she would not keep her pledge but one could almost hear a national sigh of relief when the die was officially cast.

There was little excitement in London. Crowds gathered in front of the War and Admiralty buildings on the Strand and in Trafalgar Square, but I do not recall hearing a band play. The only music was the call of the bugles, the only cheering when the king or some cabinet minister passed in the street. There seemed a grim, determined, bulldog spirit in the air. Regiments of strong vigorous young men in khaki and Scottish regiments in kilts, went marching away to an unknown battle ground. There was a "do or die" spirit that was mighty impressive. From Australia, Canada, India and the "Islands of the Sea" came a loyal response to the Empire's battle cry.

Great Britain was preparing very methodically for a long and terrible contest but there was no shrinking. I heard many expressions from Britons that there was no bitterness against the German people—only against the “war lord” and the military despotism that had threatened the peace of Europe so long, and imposed such heavy burdens of armament. There seemed to be the feeling that when the great conflict was over that it would make for peace. My one great and lasting impression of England is of a people who realize to the fullest what a terrible struggle confronted them, and they were making the sacrifice with a grim determination after having counted the cost. They were in no doubt as to the final result.

At the hotel in London I met my friend, Prof. S., a young German college professor, who had been in the United States a year. He had come to London to attend the International Veterinary Congress only to find a call to join the German colors. He said with tears in his eyes: “I don’t want to fight,” but in an hour he was on his way to the war.

We returned to Halifax, N. S., second class on a freight steamship, stopping two days at St. Johns, Newfoundland. Here the naval reserves with sea-tanned, weather-beaten faces and hands horny from handling ropes, were flocking to their ships. They marched down the hilly streets to the wharf with the “rolling gait” of those used to the sea.

At Halifax the “colonial troops” were leaving for “over seas.” Long-limbed, clean-cut fellows were saying “good-bye.” Soldier husbands hugged their little ones in their arms as they marched to the station, while dry-eyed, anxious wives walked beside them, or sweethearts with tears and smiles bade their lovers “God speed.”

All the little villages in the French Canadian provinces were sending companies of young men to war with cheers and music. Here the band was playing martial music; here the cheering crowd, the torches and excitement, but as the train rolled away into the night there were many aching hearts left behind.

In lower Canada there was scarcely any excitement, only train loads of khaki-clad, business-looking young Canadians, all responding with set, determined faces to the call of duty, to give their lives if need be, for “Our King and Empire.” We could not resist the call of race and we gave them three hearty American cheers of “good luck and God speed” as their train rolled away toward the sunrise.

N. S. MAYO.

TREATMENT OF HOG CHOLERA.

COLLINSVILLE, Ill., September 16, 1914.

Editor AMERICAN VETERINARY REVIEW, New York:

I believe that the reporting of bad results in the veterinary profession would be more instructive and prevent more trouble to the rest of the profession, than only to report flowers and sunshine. If you deem the following article of interest enough to publish in your periodical, you have my permission.

A NEW AND SUCCESSFUL DISCOVERY ON THE TREATMENT OF HOG CHOLERA—Eight years ago, while still in the employ of the Bureau of Animal Industry, cholera then prevailing, I had calls to protect herds. I recall three farmers who came to me and asked to have their herds protected. I went there and used the nice operation of serumizing. The largest herd contained 56 head, all apparently well and eating; the same condition in the other two herds. Used a serum from a supposed-to-be reliable firm. Nevertheless, within ten days all three had been here, the one with the 56 came late in the night, woke me and in low words said: "Doc, do you know that every one of them hogs is sick."

The first thing the next morning I made a visit and found things in a deplorable condition; I was about as sick as the hogs (but not fatal). I then prepared the formula recommended in the annual report of the B. A. I., made several visits, corresponded with some very eminent men in the profession, and at the end of two months the owner of the large herd informed me that four pulled through and they wasn't worth a lead dollar.

Then I started to treat with the sulphocarbolates (Abbott's), a little expensive.

One place with 11 nice fat hogs of about 225 pounds, average, all sick and moping around, not eating, high temperature, etc. I bled the sickest one (nearly dead), and made a bacterine of his blood (viz.: kept it at a temperature of 137 degrees F. for 3 hours, strained through muslin and added a small amount of creosote), revisited and injected into the ham 15 c.c. In 36 hours every one was up and eating, by all appearances well. Ten days later a relapse set in and the hired hand informed me later that the owner wouldn't spend any more. The results were that all but one or two died. I believe a bacterin will raise the opsonic index quicker than a serum.

Next I stumbled on a tablet used extensively by the medical profession to disinfect chambers, urinals and the like, used by typhoid patients. These prove to be systemic as well as intes-

tinal antiseptics. Make a nice solution in skimmed milk. As long as a hog will eat these have proven very successful, and those that won't eat I don't think are worth while to tamper with; let them alone, perhaps in a day or two they will commence to drink fresh water, later, the milk with these tablets.

To prevent answering inquiries, these tablets (Sulpholettts) are put up by a Green Gross Laboratory, St. Louis, Mo., P. O. Bridge Station. One tablet is an average dose for a 50 to 75-pound hog, twice daily. 200 tablets in a box for \$1.

They are now furnishing full information for the administration in hog cholera on one of their labels.

Internal medication of this nature we are positive is never anaphylactic. I think the sero-simultaneous method is very dangerous to send out, as many practitioners are too busy to properly destroy the virus, throw it on the manure pile, which some farmer hauls out and we can imagine the results. Why do the serum firms give the virus away free?

DR. L. B. MICHAEL.

CONTROL OF GLANDERS.

Editor AMERICAN VETERINARY REVIEW, New York, N. Y.:

A little article in Vol. 45, No. 5 (August, 1914), page 581, is of considerable interest to me, and although I agree in part with Daniel D. Lee, who has written concerning the control of glanders, from Boston, under date of June 19, 1914, I believe it is possible to reach the end, at least in part, by other means.

I note in this article the statement that quotes, "the percentage of glanders is so great in large cities that a slaughter of those reacting without apparent symptoms would be too great a financial strain on the owner or even the state, if full value were paid." Probably Kansas City, Mo., with something over 250,000, is not considered a large city, but will say that beginning about 1903, for a period of four or five years, we had considerable difficulty with glanders in this city; finally we were successful in having the open drinking fountains closed and during the last two years the number of cases of glanders have been materially diminished, in fact, from January 1, 1914, to the present date, three cases of glanders have been reported from this city.

I attribute all of this to sanitation, closing of drinking fountains, cleaning and disinfecting premises where glandered animals

are found. Thinking that it is of value to give other views on such matters I am writing this to you.

Yours truly

A. T. KINSLEY.

NEW ORLEANS MEETING OF THE A. V. M. A.

To the Editor, AMERICAN VETERINARY REVIEW:

The response to the letters sent out the first of September indicates that there will be a large attendance at the next meeting of the American Veterinary Medical Association in New Orleans the last four days of December next.

Those in charge of the program report an excellent array of talent prepared to give everyone a post-graduate course in practical veterinary subjects.

There are many subjects to be considered that affect the actual progress of the association of the greatest importance; subjects that every member of the association is interested in, and that demand the judgment of every member of the association. The writer has not the proper command of English to do justice to the city of New Orleans. Some of the native or adopted sons of that quaint, attractive old city will have to do that. I will say, however, that New Orleans is the only city we ever stopped in just to see and know the city. The more we saw of the city the better we liked it. It is probably the most foreign, and to many the most interesting city in the United States—the strange blendings of French and Spanish and the tropics. But I said I would leave this to others. One thing I must say, that if you want some good things to eat, go to New Orleans.

Everybody is going. So make your plans to be there.

N. S. MAYO,
Ravenswood, Chicago, Ill.

AMES STRENGTHENS ITS VETERINARY FACULTY.—The veterinary school of the Iowa State College, at Ames, has strengthened its faculty by placing a graduate veterinarian as assistant in the Pathology, Anatomy and Surgery Departments. Drs. C. C. Officer, J. S. Grossman and W. F. Guard occupy the positions in the order named.

ARMY VETERINARY DEPARTMENT.

EXTENSION OF ARMY MEAT INSPECTION.

The following note of the *Army and Navy Journal* of August 4th constitutes a compliment to the intelligent and faithful work performed by the veterinary inspectors of the Quartermaster Corps, U. S. Army. The extension of the meat inspection service to the Commissariat of the Panama Canal Zone, by petition from that source, proves that this service is becoming more generally known and appreciated throughout the army.

It is to be regretted that this note is not just enough to mention the fact that "veterinarians" perform this service, because even to-day the great majority of officers generally believe that "commissary officers" are in charge of this work.

The passage of the Army Veterinary Bill would speedily set matters aright as to correct facts, and induce army sentiment to change in favor of the work performed by veterinarians.

The note is as follows:

INSPECTION OF MEAT.

The secretary of war has granted authority for the meat inspectors of the quartermaster corps of the Army employed in Chicago and Kansas City to perform the duty of inspection of meat for the Panama Railroad Company at the request of the general purchasing officer of the Panama Canal. No charge other than the necessary transportation expenses will be made against the Panama Canal on account of this service. It is necessary for the Panama Canal authorities to furnish the Army quartermasters and the inspectors with copies of contracts and specifications, notices of dates of shipment and delivery, so that the inspection may be facilitated. A rigorous inspection has been carried on since the reorganization of the Army in 1901 by the same men in these two packing centers in the case of all meats and meat products which are bought as subsistence stores. The new order of the secretary of war, ordering a similar inspection for such stores for the Panama Canal Zone, cannot but be considered as a compliment to the men in Chicago and Kan-

sas City, who have done the work for the purpose of safeguarding subsistence stores since 1901.

THE EUROPEAN WAR AND THE HORSE.

The number of men engaged in the great European War has been variously estimated by military writers as being between fifteen and seventeen millions. So far no estimate has been made of the number of horses of the contesting armies.

According to the lists of the Peace Establishments of the armies of Great Britain, France, Belgium, Russia and Servia on one side, and of Germany and Austro-Hungary on the other side, a total of 693,671 horses are required by these seven armies to mount their cavalry, field artillery, pioneers, trains and miscellaneous corps. While no reliable estimate could be found of the number of additional horses required for the mobilization of these armies, it is hinted at in several foreign reports that in order to mobilize these armies properly, the peace strength of horses will have to be doubled, and in some instances trebled. Roughly estimated, therefore, 1,360,000 horses are likely to be engaged on the battle fields of the European War.

This tremendous number of horses, needed for the purpose of war only, forms an economic question of the first magnitude for the various warring governments. The destruction of horses in war is great, and their number has to be replenished or else war cannot be kept up successfully, because one link of the chain in an army organization has been broken.

The causes of the great loss of horses in war are many, and they are not as well understood and appreciated by military men generally as they ought to be. Horses in war offer, first of all, a better target than do men, both on account of their larger size and the difficulty of hiding them behind shelter. The effect of the bullet of the infantry gun is mild, but that of the shrapnel is deadly on horses, and mere splinters often produce great, tearing wounds. The treatment of these lacerated wounds is difficult with the means on hand in the field, and generally leading to insufficient recovery of the animal for further service. The diseases of war, too, notably glanders, are bound to develop sooner or later, certainly as soon as the horses become worn out from forced marches and ruthless charges; when flesh and animal spirit is lost from exposure to chilly rains, snow or frost in the open camp, or when, as is often the case, forage is scarce or absent.

War is as cruel for horses as it is for men. The result of this cruel hardship upon the horses is feared by all intelligent army commanders, who have learned that an army is made up of both men and horses. Whatever the faults of Emperor William, he is at least a true observer when he recently exclaimed: "We shall keep our borders free from our enemies as long as there is left a man *and a horse*."

When the true history of this war shall be written by military experts, the valuable and indispensable work of army horses will not be forgotten. Likewise the suffering and death of horses on the battlefield, the wounds inflicted upon them, the diseases which decimated their number, and the difficulty of disposing of their corpses on the field, will all be described and explained by the veterinary officers of the great European armies. A fund of new knowledge will thus come to us, interesting, perhaps fascinating, and none the less of great practical value for the army veterinarian and the lover of the army horse in general.

OLAF SCHWARZKOPF.

CONVENTION BULLETIN, UNITED STATES LIVE STOCK SANITARY ASSOCIATION, CHICAGO, 1914—The Executive Committee of this Association have decided to call our Eighteenth Annual Meeting at Chicago, Tuesday, Wednesday and Thursday, December 1, 2 and 3, 1914.

Preliminary work on convention program is now well under way. Members are invited to forward to me as soon as possible suggestions for titles with authors designated for papers and addresses.

We are most anxious in view of present disturbed conditions over the country to make this meeting unusually attractive. Your co-operation to this end is earnestly requested.

JOHN J. FERGUSON,
Secretary-Treasurer, Chicago.

ENROLLMENT AT THE IOWA STATE COLLEGE, DIVISION OF VETERINARY MEDICINE has shown an increase of about 30 per cent. over that of previous years in the Freshman class, and about 20 per cent. of the new men have additional college credits, and a considerable number are already in possession of a college degree. Surely this is gratifying and we hope is more or less general throughout the veterinary schools of the country.

BIBLIOGRAPHY.

TEXT BOOK OF MILK HYGIENE.

TEXT BOOK OF MILK HYGIENE, by Dr. William Ernst, Official Veterinarian and Director of the Royal Milk Control Station at Munich: Authorized Translation with Annotations and Revisions by John R. Mohler, A.M., V.M.D., Chief of Pathological Division, United States Bureau of Animal Industry and Adolph Eichhorn, D.V.S., Senior Bacteriologist, Pathological Division, United States Bureau of Animal Industry. 281 pages, with 29 illustrations and 5 colored plates. Chicago, Alexander Eger, 1914.

The importance of this subject is too apparent to require any emphasis to be laid upon it, as all veterinarians, physicians and chemists are fully appreciative of the dangers to which milk is exposed once it is drawn from the udder of the cow, and veterinarians are deeply sensible of the conditions which have direful influence upon the milk while still in the animal body. So that after all the veterinarian is the essential logical director of a healthy and clean milk supply; first, by his knowledge of disease in the animals that produce this important food, and second, by his knowledge of the changes to which milk from a healthy cow are exposed, that will make it unfit or dangerous as food for the human family—a food upon which infants largely subsist. And with this knowledge, and the responsibility which it imposes upon him, the veterinarian is ever in search of facts that will further enlighten him on the subject of *Milk Hygiene*. Much earnest thought has been given to this subject by men in the first ranks of our profession and of the medical profession, and by men whose bent has carried their thoughts along the lines of analytical chemistry. Of necessity each must lay more stress upon the branch of science with which he is most familiar, and his work is of especial interest to men following that branch of science as a profession. Just now we have before us a work written by a veterinarian, who holds a position of no less importance than that of Official Veterinarian and Director of the Royal Milk Control Station at Munich, in the person of Dr. William Ernst, whose work treats with greatest prominence the subject from the veterinarian's standpoint, although covering every other phase. Another valuable feature of the work to the American veterinarian is the fact that it has been translated into the English by such prominent representatives of our profession in this country as Drs. John R. Mohler and Adolph Eichhorn; who, fully appreciating the fact that to be of the fullest value to American veter-

inarians it must meet the conditions prevailing in this country, have included in it valuable data from the various milk commissions and other sources, and have replaced the chapter in the German edition which deals with the laws and regulations in that country by one which deals solely with the conditions and standards existing in America. The work is divided into eleven chapters, which treat the following subjects in the order named: *Anatomy, Pathology and Histology of the Mammary Gland; Physiology of Lactation and Characteristics of Milk in General; Microscopy of Milk in General; Composition of Milk and Its Biological, Chemical and Physiological Characteristics; Procurement of Cow's Milk; Internal Influences on the Character of Milk; External Influences which Act Upon Milk; Bacteria in Market Milk—Their Origin and Action; Milk Control; Milk Inspection; Fundamental Principles of Legislative Milk Control.* Many of these chapters have several subdivisions covering important phases of the general subject, and all are profusely illustrated, thereby not only adding materially to the interest of the book, but rendering it so much more readily comprehensive, the subjects under discussion. It is impossible in a review of this kind to do more than suggest the excellence of this work, which must of necessity be of a very high grade when we consider the men that have given of their time and their talent to translate it into the English. After a perusal of *Ernst, Mohler and Eichhorn's Text Book of Milk Hygiene* it is our belief that no matter what work on milk you may have in your library, you *must have this one*. Bound in olive green cloth with leather back and corners (the typical Eger binding), printed on the finest quality of paper with excellent type, it presents a high-class appearance, becoming to a scientific work.

ANIMAL PARASITES AND PARASITIC DISEASES.

ANIMAL PARASITES AND PARASITIC DISEASES. Third edition, revised; by B. F. Kaupp, M.S., D.V.S., author of *Diseases of Poultry*. Formerly Professor of Pathology and Parasitology, Division of Veterinary Medicine, Colorado Agricultural College. Formerly Pathologist Colorado Experiment Station. Formerly Professor of Parasitology Kansas City Veterinary College. Formerly Veterinary Inspector U. S. Bureau of Animal Industry, Department of Agriculture. Member of the American Veterinary Medical Association and of the United States Livestock Sanitary Association. Commissioner of Public Health, Spartanburg, S. C., etc., etc., etc. 238 pages, with 81 illustrations. Chicago, Alexander Eger, 1914.

It was our privilege to review in our March, 1913, issue, the second edition of this valuable work of Prof. Kaupp. That edi-

tion has become exhausted and we now have before us the third edition. In our review of the last work we made reference to the fact that a work of that kind would be especially welcome because it deals with a phase of practice, with the details of which, the average practitioner becomes somewhat rusty, especially in terminology, differentiation and specific treatment after a few years in routine practice, and for that reason would find the work very convenient to refer to. That prediction has evidently been borne out, as the author in that short time has been called upon for a third edition. This he has produced in most excellent form, maintaining all the excellent qualities of the former edition, as to conciseness and convenient divisions of the work for ready reference, and excellence of illustrations, while adding materially to each. The work is divided into four chapters, treating on External Parasites, Internal Parasites, Protozoa, and Preparation of Specimens. The illustrations which we referred to in our review of the former work, as being so useful as well as of such extreme interest to practitioners, have been increased in number in the present edition, and four pages of photomicrographs of the *Strongylus-Armatus* group have been added and the chapter rewritten, bringing the work right up to the last word on the subject. An addenda has also been added on the present status of knowledge of the chemistry of animal parasites. The photomicrographs, both additional and those of the former edition, were made by the author with an ordinary kodak placed over the ocular lens of the microscope and given time exposure, which adds to their value in the work, as they are all the more part of the author and entirely familiar to him. *Kaupp's Animal Parasites and Parasitic Diseases* is invaluable to the veterinarian, no matter what branch of his profession he may specialize in, as it deals with those parasites responsible for the skin diseases of fowl and all animals, large and small, as well as the internal conditions of parasitic origin, and no practitioner can afford to be without this valuable little work within reach of his hand. The publisher has executed his work in his usual excellent manner, printed the book on smooth paper in clear, sharp type, and bound it in olive green cloth with leather back and corners, making a handsome little addition to the office or library.

CASTRATION.

CASTRATION—INCLUDING CRYPTORCHIDS AND CAPONING—AND OVARIOTOMY, by Frederick T. G. Hobday, F.R.C.V.S., F.R.S.E.; Honorary Veterinary Surgeon to His Majesty the King; Examiner in Surgery and Obstetrics.

to the Royal College of Veterinary Surgeons; Fellow of the Royal Society of Medicine; Honorary Member of the American Veterinary Medical Association; Membre Correspondant de la Societe de Medicine Veterinaire du Brabant; and Formerly Professor in the Royal Veterinary College, London. 160 pages, with 80 illustrations. Edinburgh and London. W. and A. K. Johnston, Limited, 1914.

This little volume, dedicated to Professor Cadiot, reached our desk as we were concluding our work on the present issue, and is a splendid contribution to veterinary surgery. It is divided into ten chapters under the following headings: *Castration, Scrotal Hernia, The Castration of Cryptorchid Horses, Cryptorchidism in Other Animals, The Caponing of Domesticated Fowls, The Caponing of Ostriches, Ovariectomy and Hysterectomy of Troublesome Mares, Ovariectomy of Cattle, Ovariectomy and Ovaro-Hysterectomy of the Smaller Animals, Abnormalities of the Sexual Glands of Man and Horses*. The author covers all of the subjects thoroughly, but not at tiresome length, and each subject is excellently illustrated. Methods of casting for different operative procedures are well illustrated and described. In the chapter on castration of cryptorchid horses, the author fully describes and illustrates the abnormalities that the practitioner is apt to encounter, and also makes instructive reference to untoward sequelae. Cryptorchidism in the bull, ram, pig, dog and cat is also discussed. The chapter on ovariectomy of troublesome mares is very interesting; sixteen cases are cited by way of illustration. Altogether, *Hobday's Castration and Ovariectomy* is an excellent little work for both student and practitioner, being the product of a veterinarian of extensive experience, both as a practitioner and a teacher. The publishers have executed their part of the work well, and the book is neat and convenient in size, so that it can readily be slipped in the side pocket for reading on the road. All veterinarians and veterinary students should have it.

COLLECTED PAPERS FROM THE RESEARCH LABORATORY OF PARKE, DAVIS & CO., DETROIT,
MICH., VOLUME 2.

This volume of 310 pages contains *Studies On Hog Cholera*, by Walter E. King and Robert H. Wilson; *Studies On the Virus of Hog Cholera*, by Walter E. King and F. W. Baeslack; *The Physiological Activity of Cannabis Sativa*, by H. C. Hamilton, A. W. Lescohier and R. A. Perkins; *The Iodine Content of the*

Small, Medium and Large Thyroid Glands of Sheep, Beef and Hogs, by T. B. Aldrich, Ph.D.; *Studies On the Virus of Hog Cholera*, by Walter E. King and Robt. H. Wilson; *On the Cultivation of the Treponema Pallidum (Spirochaeta Pallida)*, by F. W. Baeslack; *Studies on the Genococcus*, by Carl C. Warden; *Studies on the Virus of Hog Cholera*, by Walter E. King, F. W. Baeslack and George L. Hoffmann; *Bacillus Bronchisepticus—Its Relation to Canine Distemper*, by N. S. Ferry, M.D.; *Drug Influence on Extrasystoles of the Mammalian Heart*, by Carey P. McCord, M.D.; *The Employment of Protective Enzymes of the Blood as a Means of Extracorporeal Diagnosis*, by Carey Pratt McCord, M.D.; *On Feeding Young White Rats the Posterior and the Anterior Parts of the Pituitary Gland*, by T. B. Aldrich; *The Rational Use of Adrenalin in the Treatment of Asthma*, by Carey P. McCord, M.D.; *Standardization of Disinfectants—Some Suggested Modifications*, by H. C. Hamilton and T. Ohno; *Preventive Measures Against Equine Influenza Based on Its Bacteriology*, by N. S. Ferry, M.D.; *Correcting Water—Methods of Treating Hard and Alkaline Waters—How to Remove Objectionable Ingredients, etc.*, by H. C. Hamilton; *Duration of Immunity Following Smallpox Vaccination*, by A. W. Lescohier, M.D.; *On Crystalline Kombe-Strophanthin*, by D. H. Brauns, Ph.D., and O. E. Closson, Ph.B.; *A Comparative Study of Antigens for the Wassermann Reaction*, by H. R. Varney, M.D. and F. W. Baeslack, M.D.; *The Treatment of Tetanus*, by Charles T. McClintock and Willard H. Hutchins; *Spirochaeta Suis, Its Significance as a Pathogenic Organism—Studies on Hog Cholera*, by Walter E. King and George L. Hoffmann. Numerous illustrations and a colored plate of a hog laid open showing the abdominal viscera twenty-two days after inoculation, with suspension of culture from cecum.

SICK HORSES—HOW TO PREVENT—HOW TO TELL AND WHAT TO DO.

The above title designates a little brochure compiled and edited by Chief Veterinarian Mangan of the Department of Street Cleaning of the City of New York, and issued by direction of Commissioner Fetherston. This little pamphlet of fifteen pages, after addressing a chapter to the employees, as to their responsi-

bilities in connection with the horses of the department, deals briefly, in a clear and direct manner with *Colic, Its Causes, How to prevent, How to tell it when it occurs, and What to do. Azoturia* is dealt with in the same manner, and likewise *Sunstroke, Heat-stroke or Heat-exhaustion*. A fifth chapter deals with *Injuries, Lameness and Other Ailments*, the idea being to inculcate into the employees a spirit of responsibility and a knowledge of the care of the horses that will tend to prevent, as far as possible, the occurrence of acute ailments of the horses, and enlighten them on the principles of *First Aid Treatment*. All employees are supplied with copies of the little book and required to study it, their immediate superiors being held responsible for their acquirement of the knowledge of its contents. This is the first thing of the kind, so far as we are informed, and if it proves successful in accomplishing its object, *i. e.*, lessening preventable disease among the horses of the department, no doubt a second edition will be issued, with some additional features. We congratulate Commissioner Fetherston in having so progressive a veterinarian directing the veterinary service of his department, which must reflect credit upon our profession.

EIGHTEENTH ANNUAL REPORT OF THE PENNSYLVANIA DEPARTMENT OF AGRICULTURE.

We recently received the 18th annual report of the Pennsylvania Department of Agriculture for 1912, published at Harrisburg by the State Printer, 1914. This official document of 558 pages covers every phase of agriculture, crops and domestic animals, and represents a tremendous amount of work in its compilation. The report of the State Veterinarian occupies 48 pages and is very interesting; covering *Meat Hygiene*, by Deputy State Veterinarian T. E. Munce; *Horse Breeding*, by Veterinary Director Carl W. Gay; *Transmissible Diseases*, by Veterinary Director R. M. Staley; *Laboratory and Research Work*, by Veterinary Director K. F. Meyer; *Milk Hygiene and Tuberculin Testing*, by Veterinary Director W. S. Gimper. This is followed by the report of the dairy and food bureau, which is also of interest to veterinarians, as is also an illustrated chapter on poultry and modern methods of finishing and dressing. In fact the whole volume is filled with valuable information.

OBITUARY.

DANIEL ELMER SALMON, B.V.Sc., D.V.M.

Dr. Daniel Elmer Salmon, former Chief of the Bureau of Animal Industry of the United States Department of Agriculture, was born at Mount Olive, Morris County, New Jersey, July 23, 1850, and died of pneumonia at Butte, Montana, August 30, 1914. His early life was passed partly on a farm and partly as a clerk in a country store. He was educated at the Mount Olive district school, Chester Institute, Eastman Business College, and Cornell University. He entered Cornell University at its opening in 1868, being a member of its first freshman class. Here he became acquainted with Prof. James Law, who had just come to America to fill the chair of veterinary science in this new and progressive institution, and after consulting with him decided to take the scientific course for the first year and after that gradually take up veterinary studies, with a view of graduating from that department at the end of four years. This plan was substantially carried out, but as the clinical facilities at Ithaca at that time were not as extensive as were desirable, he was allowed to attend the Alfort Veterinary School, Paris, during the last six months of his course without prejudice to his standing at Cornell University. He was graduated at Cornell in 1872 with the degree of Bachelor of Veterinary Science. The same year he began veterinary practice in Newark, New Jersey. In 1875, on account of impaired health, he went to Asheville, North Carolina, for the benefit of the southern mountain climate. In 1876 he received from Cornell the advanced degree of Doctor of Veterinary Medicine. In 1877 he delivered a course of lectures on veterinary science in the University of Georgia.

The appropriation for use of the Department of Agriculture of \$10,000 in 1878 for the investigation of animal diseases led to his appointment for a period of two months to study the diseases of swine. He was appointed an inspector of the State of New York in 1879 to serve on the staff of Professor Law in an effort to stamp out the contagious pleuro-pneumonia of cattle. Here he had an opportunity by daily observation to acquire a

thorough knowledge of the disease and of the methods of controlling it. This work was arrested in the autumn by the exhaustion of the appropriation, and he accepted an appointment from Commissioner Le Duc of the United States Department of Agriculture to investigate animal diseases in the Southern States, with particular reference to Texas cattle fever. These investigations were the starting point of the scientific work conducted by Dr. Salmon, or under his direction, concerning fowl cholera, the contagious diseases of swine, Texas fever, and the nodular disease of sheep, which have cleared up the principal points as to the cause, nature and control of these diseases.

Early in 1883 he was called to Washington by Commissioner Loring to establish a veterinary division in the Department of Agriculture. Within a year Congress passed an act establishing the Bureau of Animal Industry, and Dr. Salmon was appointed Chief of this Bureau, a position which he held uninterruptedly until December 1, 1905. The most important things accomplished by the Bureau during his administration were: 1. The complete eradication of the contagious pleuro-pneumonia of cattle from the United States. 2. The study and control of Texas fever. 3. The establishment of the Federal meat-inspection service. 4. The establishment of the inspection of exported animals, and the ships carrying them, thus doing away with the cruel treatment and suffering which had been a startling feature of this traffic, reducing the losses and preserving the trade. 5. The preservation of the country from imported diseases by perfecting the system of inspecting and quarantining imported animals. 6. The scientific investigation of animal diseases and their bearing upon public health questions.

In the summer of 1906 he accepted a position under the Government of Uruguay as head of the Veterinary Department of the University of Montevideo. He organized that department and remained at its head for five years. He then returned to the United States and was engaged in special veterinary work in the West. For the past year he was in charge of a plant for the production of anti-hog-cholera serum at Butte, Montana, where he died.

Dr. Salmon was an honorary Associate of the Royal College of Veterinary Surgeons of Great Britain; Fellow of the American Association for the Advancement of Science; chairman of the committee on animal diseases and animal food of the American Health Association; ex-president and member of the executive Public Health Association; ex-president and member of the

executive committee of the American Veterinary Medical Association; member of the Washington Academy of Sciences, and of various other bodies devoted to medical and general science. His writings on these subjects are well known and have been published in many languages.

TRIBUTE OF W. HORACE HOSKINS ON THE DEATH
OF DR. D. E. SALMON, AT WASHINGTON,
SEPTEMBER 8, 1914.

It was my precious privilege to have known for more than thirty years this good man—whose body lies before us—and it will remain a priceless memory for my remaining years to recall how full his life work was of splendid services.

Most of his years were spent in official life and he served his country for more than a score of years with the highest fidelity and devotion and added riches beyond computation to the material prosperity of those engaged in agriculture and its allied field of Animal Industry, while at the same time he laid every man, woman and child of our land under a debt for his conservation of their health through a guarded animal food supply.

In the solution of many of the problems of animal diseases, their control and eradication, he did a public service of great magnitude and worth and accepted every added duty as an increased responsibility that he discharged with the most earnest fidelity.

He likewise drank of the cup of bitterness of a country's ingratitude, through the arbitrary power of one of its chief rulers.

I knew him intimately in the field of association work, where he ever maintained the highest ideals and ever added his voice for higher and better standards in education and association service.

He was a true investigator and ever as a student, which covered his life work, he sought only the truths, and in his writings and teachings his greatest aim was only to impart those truths and facts that patient, sincere investigation revealed.

Kindly of heart, generous in nature, forbearing in spirit to all men, his life was filled with great achievements for his profession, that added to the world's progress and wealth and for which he sought no vain glory.

Future history will properly record this good man's worth and our children's children will lay at his feet their tribute of his life work of investigation and usefulness.

Loved and honored by his profession with the best gifts it could bestow he has left a priceless memory with those whose privilege it was to know him well.

KLEIN'S TRANSLATION OF FROHNER'S GENERAL THERAPEUTICS NOW IN PRESS—The new fourth revised edition of Frohner's General Therapeutics has been translated into English by Dr. Louis A. Klein, Dean of the School of Veterinary Medicine of the University of Pennsylvania and is now in press. This book discusses therapeutics in a manner entirely different from that in which the subject is presented in other works. Each apparatus of the animal body is taken up in turn, and after a concise but complete survey of the physiology and a review of the pathological changes to which it is liable, the therapeutic methods which may be used to correct these changes are presented. This is followed by a list of the drugs used in the treatment of the diseased conditions, the particular diseases to which each one is suited being stated together with the doses, which are given in the apothecaries, as well as in the metric system. There are also chapters on the treatment of fever, immunity and the use of vaccines and antitoxins, the various methods of using tuberculin and mallein, disinfection, massage, firing, etc. All of the essential facts are presented in concise form and conveniently arranged for reference, making the book suitable for the busy practitioner as well as the student. The fact that the book has gone through four German editions is strong evidence that it is a useful work for veterinarians and veterinary students. J. B. Lippincott Company, publishers, Philadelphia.

IOWA VETERINARY ASSOCIATION.—The next meeting of the Iowa Veterinary Association will be held at Cedar Rapids, December 9th, 10th and 11th. This excellent association of the Hawkeye State always holds something good in store for those who attend it; and when Secretary Stange modestly says, "we anticipate a successful meeting," it means much.

SOCIETY MEETINGS.

NATIONAL ASSOCIATION BUREAU OF ANIMAL INDUSTRY EMPLOYEES.

The second annual convention of the above association was held in Denver, Colorado, August 10, 11 and 12, 1914. After the opening of the convention on the morning of August 10th, at 10 a. m., by National President Gibson, of Albany, N. Y., a resolution was passed for an adjournment from 11.30 a. m. to 3 p. m., out of respect to the deceased wife of the President of the United States, Mrs. Woodrow Wilson; and also that a resolution of sympathy be sent to President Wilson. This message was deeply appreciated by the President and promptly acknowledged. The following resolutions will give some estimate of the work done at this meeting, of which these resolutions are the essence. Many many others were introduced and passed.

RESOLUTIONS.

185 Northwestern Ave., Milwaukee, Wis., Sept. 1, 1914.

To all members, N. A. B. of A. I. E.:

Greetings.—The resolutions that were adopted at the second annual convention of the N. A. B. of A. I. E. in the Magnolia room of the Albany Hotel, of Denver, Col., August 10 to 12, 1914, are as follows:

Resolution No. 1.—Be it resolved, That the second annual convention of the National Association, Bureau of Animal Industry Employees, in session at Denver, Col., this the 10th day of August, 1914, in deep respect and sympathetic condolence with Hon. Woodrow Wilson, President of the United States, on the death of Mrs. Wilson, his beloved wife, do hereby adjourn from 11.30 o'clock a. m. to 3 o'clock p. m., and herewith extend to the President of the United States, our heartfelt sympathy and respect in this his great bereavement.

And, be it further resolved, That this resolution be spread upon the minutes of this convention, and that a copy of the same be forwarded to the Secretary of the President.

Resolution No. 2.—"Resolved, That the N. A. B. of A. I. E. declare for a hearty co-operation with the department and bureau

officials for the purpose of conscientiously administering the law and honestly and proficiently performing the duties assigned to them."

Resolution No. 3.—Resolved, That the second annual convention of the N. A. B. of A. I. E. indorse the Lobeck-Lewis Bill. H. R. 9292-5720. Resolved further, That the next executive committee be authorized and empowered to endorse any alterations or amendments to the Lobeck-Lewis Bill which may become necessary to secure its enactment into law, providing said alterations and amendments do not conflict with the fundamental principles of said Lobeck-Lewis Bill.

Resolution No. 4.—Resolved, That we endorse the McGillicuddy Federal Employees Compensation Bill, H. R. 15222, now pending in Congress. (Memo.—A motion was carried in this connection, that the legislative representative in Washington be instructed to use his best endeavors to secure the passage of the McGillicuddy Bill.)

Resolution No. 5.—Resolved, That the N. A. B. of A. I. E. adopt a bold or enamel button to be worn by all members of this association; style to be the same as the shield used for printed matter; members to purchase said button at their own expense.

Resolution No. 6.—Whereas, Rev. H. L. Bowlby, secretary of the Lord's Day Alliance, and Wm. E. Russell, of the Federal Civil Service Society, of the State of New York, and Harry R. Meyers, chairman of the Ways and Means Committee of the Federal Civil Service Society of the State of New York, are and have been active in further the interest of all questions affecting our association,

Be it therefore resolved, That this association in convention assembled tender their sincere thanks and appreciation to the above mentioned gentlemen.

Be it further resolved, That a copy of this resolution be spread upon the minutes of the convention, and one copy sent to each of the persons mentioned therein.

Resolution No. 7.—Resolved, That this convention endorse the action of the national secretary, Dr. S. J. Walkley, in his approving of section 8, S5720.

Resolution No. 8.—Resolved, That this convention re-endorse the Hamill Civil Service Retirement Bill, No. H. R. 5139.

Resolution No. 9.—Resolved, That this convention urge all officers and members of the various locals to put forth every effort to obtain endorsements of the Lobeck-Lewis Bill, from

live stock exchanges, commercial clubs and other civic bodies, also senators and members of congress from their own or other localities.

Be it further resolved, That when such endorsements are obtained they be promptly forwarded to the national secretary.

Resolution No. 10.—Resolved, That we heartily thank the Denver Branch, No. 7, and Mr. W. S. Pidcock for the splendid reception and entertainment given this convention during our stay in Denver.

Be it further resolved, That we thank the Buffalo Branch, No. 22; for magnanimously paying out of their own treasury the expense of Prof. Veranus a of Cornell University, and Chas. W. Pagle, Jr., secretary of Buffalo Branch No. 22, incurred by their appearing before Congress in the interest of the Lobeck-Lewis Bill.

Be it further resolved, That thanks be extended to Milwaukee Branch No. 2, in paying the expense of Prof. M. P. Ravenel, of the University of Wisconsin, incurred by appearing before Congress in the interest of the Lobeck-Lewis Bill,

And be it further resolved, That thanks be extended to the New York Branch No. 19 for paying the expense of President Russell of the Federal Civil Service Retirement Association, to go to Washington in the interests of the Lobeck-Lewis Bill.

Resolution No. 11.—Resolved, That we heartily endorse circular letter No. 518, recently issued by Dr. A. D. Melvin, chief of the U. S. Bureau of Animal Industry.

Resolution No. 12.—Resolved, That this convention render a vote of thanks to the chief of the U. S. Bureau of Animal Industry in permitting Dr. John R. Mohler to attend this convention.

Resolved further, That a vote of thanks be tendered to Dr. John R. Mohler, assistant chief of the U. S. Bureau of Animal Industry, for his kindly interests in this association.

Election of officers resulted as follows: President, Dr. J. E. Gibson, Albany, N. Y.; first vice-president, F. C. Krehl M.I., Milwaukee, Wis.; second vice-president, David Richardson, M.I., Ft. Worth, Tex.; third vice-president, Stephen Bray, I.A., Kansas City, Kan.; fourth vice-president, F. McCarthy, M.I., Brooklyn, N. Y.; secretary, S. J. Walkley, Milwaukee, Wis.; treasurer, Louis Donham, I. A., East St. Louis, Ill. At the conclusion of the session, the association adjourned to meet in New York City the second Monday in August, 1915.

S. J. WALKLEY, *Secretary.*

PENNSYLVANIA STATE VETERINARY MEDICAL ASSOCIATION.

The semi-annual meeting of the Pennsylvania State Veterinary Medical Association was held September 23d in the rooms of the Clover Club, Allentown.

The meeting was brought to order by President Cox at 11.30 a. m. with 30 members in attendance.

The order of business resulted in the appointment of a committee of three, to be known as the Salmon Memorial Committee, and a Higher Educational Committee of five.

Drs. G. A. Wehr, Denver Lane, Lancaster Co.; Milton D. Harper, Breinigsville; Richard L. Kramlich, Fogelsville; and Jesse Z. Hillegass, Allentown, were elected to membership.

After the meeting was adjourned at 1 p. m., luncheon and refreshments were served to the members in attendance before the start to the Allentown fair was made.

From the way the members drifted after reaching the fair grounds it may be said that the fair proved attractive and interesting to all.

JOHN REICHEL,
Corresponding Secretary.

YORK COUNTY VETERINARY MEDICAL ASSOCIATION.

The York County Veterinary Medical Society met in the National Hotel parlors, York, September 8, 1914, with a good attendance, and held a very interesting meeting. The secretary, Dr. E. S. Bausticker, reported a case of Rabies in a dog owned by E. W. Baekel, on Benjamin Stoner's farm, Hellam township, which was confirmed by the State Livestock Sanitary Board of Pennsylvania, after sending the head of the dog to Philadelphia. Dr. Charles Lenhart read a paper on "*Tracheotomy in Animals*," which was enjoyed by all present, also a general discussion on the following diseases and their treatment by all members present: *Glanders, Cerebro-spinal Meningitis, Colic in horses, Bone Spavin, Anthrax and Stringy Milk in Cows and Acute Laminitis in Horses*. Dr. Charles H. Flickinger, of Jefferson, was elected as a member of the society. The society will meet next December.

NEWS AND ITEMS.

"THE MEDITATIONS OF MARTA."*

(Being the reflections of a bull pup.)

Dear me but this is a terrible world for poor little I. You see, I have been adopted because my mother had so many children that she could not feed them all without the assistance of a cow, and as my mother is very old fashioned, she would not accept such a plan. So she gave me to two old maids to bring up, that are so grouchy they creak when they walk. And you can't even bat an eyelash without them seeing it. I am only seven weeks old, and my stupid old new mothers expect me to act just like a grownup, and to know everything there is to know, even to their ah's and oh's.

You don't know how lonesome I get without my mother who "born" me, and my brothers and sisters; I try to forget my troubles by frolicking around a bit, but my overseers object to that, and before I can wag my tail thrice they have me by the back of the neck, rubbing my nose on the carpet until I think I have none left, and I am sure there are bits of it interwoven in the pattern, and then they show me a newspaper as much as to say, "Employ your time in reading that, so you won't die ignorant."

You see, they are very "littery," or at least think so, and then, if I don't care to improve my *mind*, they spank me on the part that goes last, and put me in what they call a satchel, but I say it's a padded dungeon, for they never seem to hear me cry after the door is shut. And would you believe it, that is where I sleep at night with the door open, but covered over with one of those horrid mind improvers.

Oh, I do wish my adopters would be human and realize that I am just a wee bit of a new thing, and would let me do a lot of investigating with my new teeth, the very first ones I have ever had, so they will grow very strong and sharp, and let me have some of everything they eat, and go to bed with them,

* Published by courtesy of Miss Ruth Richmond, the author.

when I please, and get up, when I please, and have all the old shoes, carpets, rugs and furniture that I want to play with, then I would be happy, and not think this old world so terrible.

ANNUAL OUTING OF THE NATIONAL ASSOCIATION BUREAU OF ANIMAL INDUSTRY EMPLOYEES, BRANCH 19.—The second annual outing of the National Association Bureau of Animal Industry Employees, Branch 19, was held at Donnelly's Grove, College Point, L. I., Saturday, September 5th. More than 300 members of the association and their friends, with a proper representation of the packing and slaughtering interests, made this outing a thorough success. The day was ideal and the throng came early with smiling faces and all joined in the games, races and other contests; drinking each other's health, smoking good cigars and were as happy as the day was long. There was a continuity of receptions among friend that were brought together, with laughing and good-natured jollyng in abundance, and yet a sturdy interest in the competitive events. All were loath to leave the bracing breezes of the large park until darkness made further outdoor pleasure impossible. Adjournment was then made to the well-lighted and spacious dining room, where a dinner such as only Donnelly knows how to prepare awaited the hungry outingers. While the dinner was under way Mr. William F. Brown, president of the association, in a few well-chosen, preliminary remarks introduced Mr. Harry R. Meyers, chairman, Ways and Means Committee of the Federal Civil Service Society of the State of New York, who acted as toast-master and, after a short address, in which he attested to the excellence of the affair, introduced several officers and members of the Bureau Association and many of the representative visitors. Dr. N. L. Townsend, inspector in charge of New York, was the first called on, and he said he was highly pleased to see affairs of this kind which tended to bring closer together the bureau employees and create a more united and more co-operative body. He refreshed the members' memories by repeating some of the things he said a year ago, shortly after his coming to New York, at which time, at the first annual outing, he asked for the support and unity of all bureau men and said at that time he was a little timid as to how he would be received, but was pleased to say that he had received all the support he had sought. After a few concluding remarks, in which he complimented the committee and extended a hearty welcome to the visiting friends of

the association, he sat down amid cheers and applause that made the building ring and lasted fully five minutes. Many other speakers were introduced and well received. At the dinner the prizes for the contests were awarded. All finally left at a late hour, giving a rousing cheer to Mr. Donnelly for his excellent service and promising to return in increased numbers one year hence.

INDORSEMENT OF CHICAGO LIVE STOCK EXCHANGE—EMBLEMS
FOR MEMBERS OF N. A. B. A. I.

185 Northwestern Ave.,
Milwaukee, Wis., Sept. 26, 1914.

To All Members N. A. B. of A. I. E., Greetings:

The following is a copy of the resolution received in this office from the secretary of the Chicago Live Stock Exchange:

“The Chicago Live Stock Exchange,

“Office of the Secretary,

“Union Stock Yards, Chicago, Ill., Sept. 23, 1914.

“To Whom It May Concern:

“Resolved, That the Chicago Live Stock Exchange heartily endorse the provisions of the Lobeck-Lewis Bill, H. R. 9292-S. 5720, calculated to attract and retain efficient and reliable men as employees in the work of livestock and meat food product inspection, and securing just and equitable salary schedule for the employees of the Bureau of Animal Industry.

“Adopted by the Board of Directors of the Chicago Live Stock Exchange, this, the twenty-second day of September, 1914.

“(Seal) Signed W. Baker, Secretary.”

An order has been placed with manufacturers for association emblems, and samples of same will be forwarded to all local secretaries within the next three weeks. Several orders have already been received for sterling silver and rolled gold screw back lapel buttons at 60 cents each, gold plated stick pins at 45 cents each and rolled gold hat pins at 60 cents each. The matter of supplying these emblems in the shape of watch fobs has been taken up with the manufacturer. Those who would desire the emblem in that shape will please correspond with me regarding same.

Faternally yours,

S. J. WALKLEY, Secretary.

DR. A. H. CHENEY, graduate of the University of Pennsylvania Veterinary School, has located at Polson, Montana. Dr. Cheney was formerly at Miles City, that State.

NEW YORK STATE VETERINARY COLLEGE AT NEW YORK UNIVERSITY IN NEW YORK CITY opened on September 21, 1914, with an encouraging increase in its Freshman class.

DR. A. G. BROCKER, Steamboat Springs, Colorado, left Thursday morning for Trinidad, where he had been called to consult with veterinarians in regard to a mysterious disease which has caused the death of many horses in that vicinity.

BRANDED!—When the donkey saw the zebra
He began to switch his tail;
“Well, I never,” was his comment;
“There’s a mule that’s been in jail.”
—(*The Horse Lover.*)

MARRIED SEPTEMBER 15, 1914.—Dr. David Benjamin Morgan, Neosho, Missouri, was married to Miss Maggie Fay Wright, of that place, on September 15th. The couple will be at home after October 5th. The profession congratulates them through the REVIEW.

NEW RESIDENT SECRETARY FOR NEW MEXICO.—Dr. M. Imes, of Albuquerque, New Mexico, has resigned as resident secretary of the American Veterinary Medical Association for New Mexico, as he expects to leave that State. Dr. F. H. Barr, of Albuquerque, has been appointed to succeed him.

ASSISTANT CHIEF OF THE B. A. I.—On July 1, 1914, Dr. John R. Mohler, formerly chief of the Pathological Division, became assistant chief of the Bureau of Animal Industry. Dr. A. R. Ward, formerly of the Philippines, has succeeded Dr. Mohler as acting chief of the Pathological Division.

DR. I. S. ALFORD, Paxton, Ill., has received word that he is to be appointed as an assistant state veterinarian, as a result of his passing a recent civil service examination. Dr. Alford is devoted to the study and practice of his profession in a way that has well-fitted him for any veterinary position to which he might aspire.

THE highest-priced draft horse of any breed, namely, the famous Clydesdale stallion, Baron o’ Buchlyvie, was recently

killed by his owner, William Dunlop, of Ayr, Scotland, on account of an accident which made it necessary to kill him. Mr. Dunlop is reported to have paid \$47,000 for the Baron.—(*The Horse Lover.*)

DR. BLATTENBERG ARRESTED AS A GERMAN SPY.—In a recent letter from the "Most Worthy Patron of the Blue Owls," he informed us that while traveling in the north of Ireland he was arrested and detained as a German spy, so that he almost missed his boat over to Scotland. The mistake was probably due to "Blat's" German appearance.

NEW YORK STATE MAN LOCATED IN COLORADO.—Dr. E. L. Eckerson, formerly of Spring Valley, N. Y., has located at Husted, Colorado, where he has an excellent field and is doing well. The doctor concludes a recent letter, in which he is re-entering our subscription list, by saying, "I am doing fine, but could do much better with your good magazine."

DR. GILLES APPOINTED CHIEF FOOD INSPECTOR.—Dr. DeWitt C. Gilles, recently on the staff of the Bureau of Animal Industry of the U. S. Department of Agriculture, has been appointed Chief Food Inspector of the City of Savannah. Dr. Gilles was appointed as the selection of a board of examiners, examinations being held in Savannah, Washington, D. C., Chicago and Boston.

ADDITIONS TO VETERINARY FACULTY AT NORTH CAROLINA COLLEGE OF AGRICULTURE.—Dr. W. B. Smith (D.V.M.), Auburn, Ala., 1914, has accepted position of instructor in Physiology, Histology and Pathology in the Veterinary Division of the North Carolina A. and M. College. Dr. A. H. Graham, B.S., Clemson, 1911 (D.V.M.), Ohio State, 1914, will teach materia medica and pharmacy at the same institution.

ROCKLAND COUNTY VETERINARY MEDICAL ASSOCIATION.—On August 26th, the members of the veterinary profession of Rockland County, New York, met and formed the Rockland County Veterinary Medical Association, with the following charter members: Dr. Herbert F. Harms, president, Pearl River, N. Y.; Dr. H. W. Boyd, vice-president, Nyack, N. Y.; Dr. Harry Fredericks, Suffern, N. Y.; Dr. Roland King, Stony Point,

N. Y.; Dr. Herbert S. Sackett, Spring Valley, N. Y.; Dr. Frank Breed, secretary. New York State will soon be, if it is not already, the best organized State in the Union in regard to the veterinary profession.

MASSACHUSETTS FARMERS CAN GROW ALFALFA.—The Agricultural Experiment Station has just issued a bulletin which all farmers having live stock to feed should read. This bulletin presents the authors' estimate of alfalfa as a crop for Massachusetts' farmers. It gives the results of both home and co-operative experiments to date, describes the methods of soil preparation, fertilization and seeding which seem likely to prove most successful; discusses the principal obstacles to success, and the best methods of meeting them; and gives direction for the general management of the crop. Those desiring the bulletin should apply to the Massachusetts Agricultural Experiment Station, Amherst, Mass.

OUTLOOK ENCOURAGING.—Breeder of draft horses have every reason to feel encouragement at the present outlook, for it has been repeatedly proven that the motor truck has its limitations and the public is beginning to realize it.

The country has been flooded with cleverly prepared literature, so worded as to convince the buyer of the superiority of the truck over the horse-drawn vehicle, and during the last two or three years many manufacturers, wholesalers and other concerns, both large and small, have replaced their teams with gasoline trucks. Some of these trucks are still in service, some have gone to the scrap heap, but it is acknowledged in most cases that the power truck is short-lived and a source of trouble and expense all out of proportion to the service rendered. On the other hand, a pair of good draft horses, properly used and cared for, will not only outlast several trucks, but will accomplish the work required of them for a third of the cost.

The Horse Lover is in receipt of a photograph from a city in Ohio showing a horse now 28 years old, who for the past 23 years has been in daily use by the local gas company. Can any one imagine a motor truck making such a record?

If the horse breeders and dealers of this country would adopt some of the aggressiveness and publicity methods of the manufacturers of motor trucks, they would soon find themselves so busy filling orders that there would be no time to worry about the competition of power-driven vehicles.—(*The Horse Lover.*)

VETERINARY MEDICAL ASSOCIATION MEETINGS.

In the accompanying table the data given is reported by many Secretaries as being of great value to their Associations, and it is to be regretted that some neglect to inform us of the dates and places of their meetings.

Secretaries are earnestly requested to see that their organizations are properly included in the following list :

Name of Organization.	Date of Next Meeting.	Place of Meeting.	Name and Address Secretary.
Alabama Veterinary Med. Ass'n.....	Mar. 5-6-7, 1914	Auburn.....	C. A. Cary, Auburn.
Alumni Ass'n. N. Y.-A. V. C.....	June 10, 1915.....	141 W. 54th St.....	P. K. Nichols, Port Richmond, N.Y.
American V. M. Ass'n.....	Dec., 28-31, 1914	New Orleans, La.....	Nelsen S. Mayo, 4753 Ravenswood Ave., Chicago, Ill.
Arkansas Veterinary Ass'n.....	January 5-6, 1915	Little Rock.....	R. M. Gow, Fayetteville.
Ass'n Médéciale Veterinaire Française.	1st and 3d Thur. of each month.....	Lec. Room, Lavai Un'y, Mon.	J. P. A. Houde, Montreal.
"Laval".....	2d Fri. each month.....	Chicago.....	H. A. Smith, Chicago, Ill.
B. A. I. Vet. In. A., Chicago.....	3d Mon. each month.....	S. Omaha, Neb.....	E. J. Jackson, So. Omaha.
B. A. I. Vet. In. A., So. Omaha.....	Monthly.....	St. Joseph.....	F. W. Caldwell, St. Joseph, Mo.
Buchanan Co. Vet. Ass'n.....	December 10, 1913.....	San Francisco.....	John F. McKenna, Fresno.
California State V. M. Ass'n.....	Feb. and July.....	Ottawa.....	A. E. James, Ottawa.
Central Canada V. Ass'n.....	June and Nov.....	Syracuse.....	W. B. Switzer, Oswego.
Central N. Y. Vet. Med. Ass'n.....	2d Tues. each month.....	Chicago.....	D. M. Campbell, Chicago.
Chicago Veterinary Society.....	January, 1914.....	Denver.....	I. E. Newsom, Ft. Collins.
Colorado State V. M. Ass'n.....	1st Tues., Feb., 1915.....	Hartford.....	B. K. Dow, Williamatic.
Connecticut V. M. Ass'n.....	Jan., Apl., July, Oct.....	Wilmington.....	A. S. Houchin, Newark, Del.
Delaware State Vet. Society.....	3d Mon. each month.....	Newark, N. J.....	J. F. Carey, East Orange, N. J.
Essex Co. (N. J.) V. M. A.....	2d week, July, 1913.....	Rochester.....	J. H. Taylor, Henrietta.
Genesee Valley V. M. Ass'n.....	Dec. 22-23, 1913.....	Atlanta.....	P. F. Bahnsen, Americus.
Georgia State V. M. A.....	July 17, 1914.....	E. St. Louis.....	Louis P. Cook, Cincinnati.
Hamilton Co. (Ohio) V. A.....	July 15, 1914.....	Springfield.....	L. B. Michael, Collinsville, Ill.
Illmo Vet. Med. Ass'n.....	Jan. 14, 1914.....	Indianapolis.....	L. A. Merrilat, Chicago.
Illinois State V. M. Ass'n.....	Dec. 9-10-11, 1914.....	Cedar Rapids.....	A. F. Nelson, Indianapolis.
Indiana Veterinary Association.....	Jan. 6-7-8, 1914.....	Manhattan.....	C. H. Stange, Ames.
Iowa Veterinary Ass'n.....	Oct. & Feb. each year.....	Lexington.....	J. H. Burt, Manhattan.
Kansas State V. M. Ass'n.....	2d Tues. each month.....	Philadelphia.....	Robert Graham, Lexington.
Kentucky V. M. Ass'n.....	Pending.....	Pending.....	Cheston M. Hoskins.
Keystone V. M. Ass'n.....	Sept., 1914.....	Lake Charles.....	Phil. H. Fulstow, Norwalk, Ohio.
Lake Erie V. M. Association.....	October, 1914.....	Lewiston.....	Hamlet Moore, New Orleans, La.
Louisiana State V. M. Ass'n.....	4th Wed. each month.....	Baltimore.....	H. B. Wescott, Portland.
Maine Vet. Med. Ass'n.....	Feb. 3, 4, 1914.....	Young's, Boston.....	H. H. Counselman, Sec'y.
Maryland State Vet. Society.....	July 8-9, 1914.....	Lansing.....	W. T. Pugh, Southbridge.
Massachusetts Vet. Ass'n.....	1914.....	Northfield.....	W. A. Ewalt, Mt. Clemens.
Michigan State V. M. Ass'n.....	Jan. 27, 28, 29, 1914.....	Vicksburg.....	G. Ed. Leech, Winona.
Minnesota State V. M. Ass'n.....	Semi-Annually.....	Kansas City, Mo.....	J. D. Townsend, Louisville.
Mississippi State V. M. Ass'n.....	July, 1915.....	Galesburg, Ill.....	Hal. C. Simpson, Denison, Ia.
Missouri Valley V. Ass'n.....	Sept. 24, 25, 1913.....	St. Louis.....	G. E. McIntyre, Alexis, Ill.
Mississippi Vet. Med. Ass'n.....	2d Mon., Aug., 1915.....	Helena.....	Chas. D. Tolse, Kansas City.
Montana State V. M. A.....	Lincoln, Neb.....	New York, N. Y.....	A. D. Knowles, Livingston.
Nat'l Ass'n B. A. I. Employees.....	1st Mo. & Tu., Dec. '13.....	Ithaca.....	S. J. Walkley, 185 N. W. Ave., Milwaukee, Wis.
Nebraska V. M. Ass'n.....	1915.....	Wilson.....	Carl J. Norden, Nebraska City.
New York S. V. M. Soc'y.....	June 23, 1914.....	Fargo.....	H. J. Milks, Ithaca, N. Y.
North Carolina V. M. Ass'n.....	Week of July 20, 1914.....	Delphos.....	J. P. Spoon, Burlington.
North Dakota V. M. Ass'n.....	Nov. 1913.....	Columbus.....	A. F. Schalk, Agricultural College.
North-Western Ohio V. M. A.....	Jan. 14, 15, 1914.....	Upper Sandusky.....	E. V. Hover, Delphos.
Ohio State V. M. Ass'n.....	Annually.....	Oklahoma City.....	Reuben Hilty, Toledo.
Ohio Soc. of Comparative Med.....	Fail, 1913.....	Toronto.....	F. F. Sheets, Van Wert, Ohio.
Ohio Valley Vet. Med. Ass'n.....	1st Week in Feb. 1914.....	Harrisburg.....	J. C. Howard, Sullivan.
Oklahoma V. M. Ass'n.....	March, 1915.....	Manila.....	C. E. Steel, Oklahoma City.
Ontario Vet. Ass'n.....	Call of President.....	Portland, Ore.....	L. A. Willson, Toronto.
Pennsylvania State V. M. A.....	4th Tues. each month.....	Mon. and Que.....	John Reichel, Glenoiden.
Philippine V. M. A.....	Jan. and June.....	Pending.....	David C. Kretzer, Manila.
Portland Vet. Med. Ass'n.....	Pending.....	Salem.....	Sam. B. Foster, Portland, Ore.
Province of Quebec V. M. A.....	Aug. 4-5-6, 1914.....	St. Louis.....	Gustave Boyer, Rigaud, P. Q.
Rhode Island V. M. Ass'n.....	1st Wed. fol. the 2d Sun. each month.....	Reading.....	J. S. Pollard, Providence.
South Carolina Ass'n of Veter'ns.....	Dec. 16, 1914.....	Philadelphia.....	B. K. McInnes, Charleston.
South Illinois V. M. and Surg. Ass'n.....	Pending.....	Madison.....	F. Hockman, Iola.
St. Louis Soc. of Vet. Inspectors.....	Jan. Apl., July, Oct.....	Los Angeles.....	Wm. T. Conway, St. Louis, Mo.
Schuykill Valley V. M. A.....	4th Tues. each month.....	407 Illinois Ave.....	W. G. Huyett, Wernersville.
Soc. Vet. Alumni Univ. Penn.....	November, 1914.....	Nashville.....	B. T. Woodward, Wash'n, D. C.
South Dakota V. M. A.....	Nov., 1913.....	College Station.....	S. W. Allen, Watertown.
Southern Aux. of Cal. S. V. M. Ass'n.....	2d Thu. each month.....	St. P.-Minneapolis.....	J. A. Dell, Los Angeles.
South St. Joseph Ass'n of Vet. Insp.....	Spring of 1914.....	Salt Lake City.....	H. R. Collins, South St. Joseph.
Tennessee Vet. Med. Ass'n.....	3d Wed. each month.....	514 9th St. N.W.....	O. L. McMahon, Columbia.
Texas V. M. Ass'n.....	1st Sat. each month.....	Wash'ton, D. C.....	Allen J. Foster, Marshall.
Twin City V. M. Ass'n.....	Feb. & July each yr.....	Winnipeg.....	M. H. Reynolds, St. Paul, Minn.
Utah Vet. Med. Ass'n.....	July 9, 1914.....	Montclair.....	E. J. Coburn, Brigham City.
Vermont Vet. Med. Ass'n.....	1st Wed. each month.....	Jersey City.....	G. T. Stevenson, Burlington.
Veterinary Ass'n of Alberta.....	Monthly.....	St. Paul.....	C. H. H. Sweetapple, For. Saskat-chewan, Alta., Can.
Vet. Ass'n Dist. of Columbia.....	July 9-10, 1914.....	Pullman.....	M. Page Smith, Washington, D. C.
Vet. Med. Ass'n, Geo. Wash. Univ.....	1st & 3d Fri. Eve.....	Yakima.....	J. M. Cashell, 2115 14th Street.
Vet. Ass'n of Manitoba.....	June, 1915.....	Buffalo.....	Wm. Hilton, Winnipeg.
Vet. Med. Ass'n of N. J.....	June 24, 1914.....	Pittsburgh.....	E. L. Loblain, New Brunswick.
V. M. Ass'n, New York City.....	3d Thu. each month.....	Milwaukee.....	R. S. McKellar, N. Y. City.
Veterinary Practitioners' Club.....	Feb. 10, 11, 1914.....	York.....	T. F. O'Deal Union Hill, N. J.
Virginia State V. M. Ass'n.....	June, Sept., Dec., Mar.....		Geo. C. Faville, North Emporia.
Washington State Col. V. M. A.....			R. J. Donohue, Pullman.
Washington State V. M. A.....			Carl Cozier, Bellingham.
Western N. Y. V. M. A.....			W. E. Frita, 358 Jefferson St., Buffalo
Western Penn. V. M. Ass'n.....			Benjamin Gunner, Sewickley.
Wisconsin Soc. Vet. Grad.....			W. W. Arzberger, Watertown.
York Co. (Pa.) V. M. A.....			E. S. Bausticker, York, Pa.

PUBLISHERS' DEPARTMENT.

Subscription price, \$3 per annum, invariably in advance; Canadian subscriptions, \$3.25; foreign countries, \$3.60; students while attending college, \$2; Students in Canada, \$2.25; single copies, 30 cents in U. S. Copy for advertisements should be received by 10th of month.

Rejected manuscripts will not be returned unless postage is forwarded.

Subscribers are earnestly requested to notify the Business Manager immediately upon changing their address. Make all checks or P. O. orders payable to American Veterinary Review.

SPAVINS AND RINGBONES. Ugly sounding conditions, but successfully treated with *Mistura Argenti Composita*. Look on page 9 of the present issue for the three capitals M. A. C.

EVEN THE ADVERTISING PAGES OF THE REVIEW ARE INSTRUCTIVE: Look at P. D's advertisement on the upper half of the outside back cover page of this issue for a tip on *Eserine*. Then write for some specifying *benzoate*, mentioning the AMERICAN VETERINARY REVIEW.

ATLAS HORSE FEED, GOOD IN ANY SEASON is especially good during the cold weather, when fuel is required for warming the body as well as for giving energy. All veterinarians know the value of molasses in this respect, and *Atlas Horse Feed* has just the proper proportions to get the best results. Consult the MEADER-ATLAS Co's advertisement on page 5 of the present issue, and when you write them, mention the REVIEW.

SPRATT'S DOG BISCUITS STANDARD: Veterinarians never need hesitate to say Spratt's when asked by a client for a standard dog biscuit. And they can furnish a biscuit suitable for any breed of dogs, as they make a special study of the requirements of the systems in the different breeds. You will always find their advertisement in the REVIEW, it has been there a quarter of a century. On page 24 of this issue.

AMERICAN VETERINARY REVIEW.

NOVEMBER, 1914.

EDITORIAL.

EUROPEAN CHRONICLES.

“La Mare aux Cerfs,”

Bois Jerome par Vernon, Eure.

September 15, 1914.

THE WAR AND THE PROFESSION.—I do not suppose that my readers will, by this title, fancy that I am going to entertain them at length with the effects of the terrible ordeal of events, through which the whole of Europe is passing and in which several millions of human beings are facing each other ready for destruction.

To do this, would be an improper task, and the REVIEW is no place to discuss what is going on. War with all its horrors is raging, let us hope for an early lasting peace!

With this exception, I may be allowed to consider a few professional facts relating indirectly to the war or resulting from it.

First of all comes the *International Veterinary Congress*. Through the REVIEW, I am sure, almost all that was interesting in connection with this grand festival is already known. Perhaps our friends are acquainted with the request made by the French committee to postpone the congress, when the gathering of war clouds took place. The committee of England did not accept the suggestion from France, and the result was a “hard hit to the veterinary profession,” as says the *Veterinary News*, viz.: a collapse. Opened in the morning, the congress adjourned the same day. So I heard through private information.

It was indeed a hard hit, if one takes into consideration the very peculiar position in which so many veterinarians were placed; the enormous expenses they had made, the long journeys that were traveled, the terrible difficulties to return home, etc., etc.—and after that, no congress.

So far I have found no allusion to this collapse in the veterinary papers of England, down to the date of August 15, except the *News*. Perhaps later will we have some echoes of the affair.

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The *Veterinary Journal*, however, in its August issue, had prepared a handsome souvenir, with which our friend, Prof. Hobday, devoting the whole number to the congress, to whose members, British and foreign, the *Journal* extended a hearty welcome.

Presenting first a beautiful photo of the patron of the tenth international veterinary congress, His Most Gracious Majesty King George V, Prof. Hobday then gives the history of the foundation of those international professional gatherings, and illustrates it by a likeness of its founder, Professor John Gamgee. I had the honor of being an intimate friend of the celebrated English veterinarian and received from him his photograph, which, with many others, I gave to the Museum of Veterinary Medicine in Lyons.

The souvenir then goes on with the illustration of a group taken at the first international congress and then with the likenesses of the president of the tenth gathering, the Right Hon. Walter Runciman, P.C.P.P.; that of the well-known veteran of our profession, Dr. Lydlin; of Sir John McFadyean, M.B., C.M., M.B.Sc., M.R.C.V.S., LL.D., F.R.S.E.; the president of the organizing committee of the congress; of Prof. A. Degive, the learned veterinarian of Belgium; of Prof. Stefan von Ratz; of Sir Stewart Stockman, M.R.C.V.S.; of Dr. Sir Arnold Theiler, K.C.M.G., the world-known director of veterinary research at Pretoria, South Africa; of Mr. F. Garnett, J.P., M.R.C.V.S.; of Dr. D. A. de Jong, extraordinary professor at the University of

Leyden; of Dr. W. C. Shimmel, of Utrecht; of Prof. Chauveau, of France; of Prof. E. Hess, of Berne; of Prof. A. Binder, of Vienna; of Dr. E. Perroncito, of Turin; of Dr. O. Malm, of Christiania; of Prof. Dr. Ellenberger, of Dresden; of Prof. Lignières, of Buenos Ayres; of Prof. Dr. Schmaltz, of Berlin, the anatomist known all over the world; of Major General Robert Pringle, C.B., D.S.O., F.R.C.V.S., Director General of the British Army Veterinary service; of Prof. G. Marcone, of Pisa; of Prof. A. Locusteanu, of Bucharest; of Prof. Dr. B. Bang, of Copenhagen; of Prof. A. Lanfranchi, of Parma; of Herr Schmidt, of Denmark; of Prof. W. L. Williams, of Cornell University; of John G. Rutherford, C.M.G., Canada.

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This handsome album contains besides, interesting records showing the progress of veterinary medicine in various countries. Sending to all veterinarians the likenesses of all those celebrities in our profession who, as officers of the tenth international veterinary congress, many of which intended to be speakers in the different meetings in London, this souvenir of Professor Hobday will prove an agreeable compensation to the collapse that closed the exercises of Monday, the 3d of August, 1914, for which every one will be thankful.

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SUNDRY WAR EFFECTS.—Without desiring to enter into the effects of the terrific struggle now raging through continental Europe, I may mention one which, I believe, is unique, because of the wide extent in which it prevails. I mean the effect that the belligerent action is imposing upon the *press*—the press in general and also the scientific one. That the enlisting of typographers and the possible famine of paper for printing should oblige a reduced size and number of journals, were among the expected

and temporary results. But that scientific publications should feel the need or be obliged, for the time being, to stop or reduce their issues, is a *fact* heretofore unknown, I believe. Veterinary journals are amongst those publications. The *Veterinary News*, our well-known contemporary of England, writes in an editorial notice: "Our readers will note that, following what is now a general custom in the newspaper world, we have been compelled, owing to the shortage of paper supply, temporarily to reduce the size of the *Veterinary News*."

Its interesting numbers lately have been reduced.

And again the publishers of the *Recueil* in a private letter informs me that this old French journal and the bulletins that go with it monthly, will be stopped until the end of the war, when in one number everything that was retained will be printed.

My work of monthly European chronicles, my reviews, will suffer by the absence of those professional journals, and I beg our readers to appreciate the difficulties of this case of *force majeure*; and I assure them that I will endeavor to resume my work as early and as completely as possible. I may be a little concise for the present, but that will be only for a short time.

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In direct relation to veterinarians there are a few points which, I take it, may be interesting.

Professor Vallee, the director of Alfort, writes me: "The school has been the headquarters used for 15,000 men and stabling 3,000 horses." This is quite a changed condition and appearance of the school from what it was when our American friends visited it last summer.

Professor F. Hobday has published a letter endorsing an *Urgent Call for Veterinary Surgeons*, where he said: "Great Britain is in absolute need of veterinary surgeons, and the Army in particular calls *at this moment* for their services."

To conclude these little items of news, I cite this from a daily

paper: "In the last engagement in Alsace a veterinarian was made a prisoner. The nationality was not given."

Let us hope that this sad petty news, will soon be replaced by the proclamation of a long and lasting peace.

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BIBLIOGRAPHY.—*Precis de Microbiologie des Maladies Infectieuses des Animaux Domestiques* (*Treatise of Microbiology of the Infectious Diseases of Domestic Animals*), by Professors J. Courmont, of the Faculty of Medicine of Lyons, and L. Panisset, of the veterinary school of the same city. Published by G. Doin & Sons, Place de l'Odeon, Paris.

This is an excellent work, which is written by two masters of the science of microbiology; a work which will fill in French veterinary literature a much needed book. It will occupy a first rank, as it is from two men who are already well known to the scientific world.

Already Leclainche and Nocard, in their *Maladies Microbiennes*, had touched the subject. But not sufficiently; and besides, since the publication of their last edition, some 12 years ago, microbiology has made enormous progress, which veterinarians must necessarily take advantage of.

Scientific requirements and those of professional practice are such that on account of needed positive facts, in etiology and in the diagnosis of diseases, it is of the greatest necessity for every one to possess sure and practical data that microbiology alone can give.

The treatise is presented under the form of a volume of over 1,000 pages, with 271 illustrations, some of which are colored. These are of much value to the yet uneducated student or even to veterinarians, as they will help them in their researches. The work may and will be useful to physicians, but it is essentially written for veterinarians, and for those whose general occupations relate to diseases of animals.

Practitioners, sanitarians, hygienists, inspectors of alimentary products, all will find in the *Treatise of Microbiology* informa-

tion that they could not obtain, except by long studies among specific works.

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The *Treatise of Microbiology* is divided into two parts.

In the first is presented the general technic, where necessary knowledge is exposed. The chapters on sterilization, the media of cultures, their preparations, the obtention of soluble microbial products, general methods of immunization, the serotherapy, followed by the steps necessary for the bacteriological examination of milk, of meats, etc., etc., all form a most interesting field for the investigator.

This first part occupies nearly half of the book.

The second part is the practical one. It treats of the pathogenous microbes of animals. It is divided into forty-three chapters and is the peculiar and original part of the work. The object is to give for each infectious disease every point that is of microbiological interest. It was an enormous undertaking, as it required an investigation amongst every work that had been published on the subject.

One after the other every microbial disease is treated. Concisely, but in every minute point of importance. Morphological and biological properties of the virus, their pathogenous actions, everything that is essential to the diagnosis is considered.

Of course, the part that relates to the symptomatology, to the lesions, to the natural history of the disease, the epidemiology, are limited as much as the work necessitated.

And yet, some have given material for special remarks and occupy more room. For instance, the tuberculous and pseudo-tuberculous bacilli, that of glanders, of rabies, of epizootic abortion, the filtering viruses, the invisible microbes, the trypanosomas. It is a most interesting chapter.

The treatise of microbiology is completed by an alphabetic table of the matter contained and with the names of the authors, who have written on the subjects.

We have no hesitancy to predict a great success for this work; certainly in France. But we would say as much for its publication in other countries, if ever it is translated.

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REPORT OF THE NEW YORK STATE VETERINARY COLLEGE at Cornell University, for the year 1912-1913. It is indeed for me again great pleasure to look over the excellent showing that the State Veterinary College at Ithaca makes, and to notice the progress that is exhibited.

The report signed by Director V. A. Moore refers, as usual, to the faculty first, then to the students, showing that since 1896 to 1913 the number of undergraduates has increased from 11 to 120.

Then comes consideration of the instruction given, the number of cases treated at the clinics, the diagnosis work including the tests with mallein, tuberculine anthrax, glanders, rabies, etc., with the conclusions of the needs of the college.

There is added to the report an appendix, which shows first the detailed report of the cases treated. Prof. Udall, of the Department of Medicine, shows a total number of 450, including the ambulatory clinics. Prof. W. L. Williams reports in surgical clinics, 254 cases with 962 at the ambulatory clinics.

Dr. H. J. Milks reports at the clinics for small animals 318 as having been treated.

Following this exhibition of practical opportunities, the appendix contains a communication by Prof. P. A. Fish on the *digestibility and decomposition of bob veal*, by Director V. A. Moore and Dr. C. P. Fitch a *study of infectious abortion in cattle*, by the same on the *differentiation between nodules due to glanders and those caused by parasites*, by Dr. E. M. Pickens upon an *outbreak of anthrax due to tannery refuse*, by Dr. Milks on *hog cholera serum*, by Dr. W. E. Muldoon on *surgical anesthesia*, by Dr. F. S. Jones upon a *myxo-chondro-carcinoma of the testicle of a fowl*, by Prof. Wall on *cerebro-spinal meningitis*, and by Prof. Williams on the *disease of the internal generative organs in relation to dairy inspection*.

There are a few illustrations belonging to the various subjects treated in the appendix.

Director Moore can well be proud of the work carried on under his management of the veterinary department of Cornell University.

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Referring to the part of the report where Drs. Udall and Williams make such good show with the work of their respective departments, it reminds me of a similar presentation which was made lately in the *Recueil de Médecine Vétérinaire*, where Director H. Vallee, of Alfort, published a statistic of the hospitals and policlinics work of the French school, which some of our American friends have visited during their European journey to the London congress.

In the various wards of the school there were treated 131 cases of diseases of the digestive apparatus, 250 of the respiratory, 27 of the circulatory, 50 of the genito-urinary, 45 of the nervous, 99 of the skin, 20 of the eyes, 300 of general diseases, infectious and parasitic, 126 of neoplasm and similar lesions, 220 of various external troubles, except foot diseases, of which there were 283, and finally 143 surgical operations performed, such as amputation of the penis, parturition, castration, oesophagotomy, ovariectomy, Williams' operation, tracheotomy, removal of the eye, autoplasty, cauterization, neurotomy.

The whole total of patients treated at the hospitals was 1,694.

At the policlinics, which, as I remember it, are always largely attended, the record this year reaches the fabulous figures of 19,625.

All the species of domestic animals being represented: equines, bovines, dogs, cats, swine, caprines, ovines, rabbits, ferrets and birds.

As the students of the French schools have to follow those clinics and care for the patients in the hospitals, during the third

and fourth year of studies, one can judge of the amount of practical opportunities that is offered to them before graduating.

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BIBLIOGRAPHIC ITEMS.—The following has been received and acknowledged with thanks:

Infection and Immunity, a review by N. S. Ferry, Ph.B., M.D., from the Research Laboratory of Parke, Davis and Co.

Also from the same: *Some Phenomena Involved in the Life History of Spirochaeta Suis*: Studies on Hog Cholera, by Walter E. King and R. H. Drake; reprints from the Journal of Infectious Diseases.

North Dakota Monthly—*Further Suggestions Relating to Hog Cholera—Pointers on Hog Cholera and Its Prevention*.

North Dakota Agricultural Experimental Station. Avian Tuberculosis, by Drs. L. Van Es and A. F. Schalk. An illustrated pamphlet on the subject, considering the history of the disease, the geographical distribution, the economic importance in relation to it, its etiology, modes of transmission, and pathogeny, symptomatology, diagnosis, prognosis, prophylaxy and relations to mammalian tuberculosis, with finally a bibliographic list containing the mention of 291 pamphlets, papers and articles that have been written by authors all over the world. The whole forms a valuable addition to the literature on the disease.

A. L.

THE LAND OF ROMANCE.

PRESENT DAY GLIMPSES OF PAST SPANISH AND FRENCH GRANDEURS AND ANTE-BELLUM SPLENDORS AWAITING DELEGATES TO THE NEW ORLEANS CONVENTION.

For those delegates to the 1914 convention of the American Veterinary Medical Association who take an interest in the historical and romantic there is in store a rare treat.

At New Orleans there is located the greater portion of the most notable historical buildings and sites of the "Southland."

The city was laid out in 1718, and in 1722 became the capitol of the French territory of the lower Mississippi. In 1762 it was ceded to Spain, together with other French territory, but the inhabitants objected, and when the Spanish governor arrived four years later he was expelled. In 1800 the territory was



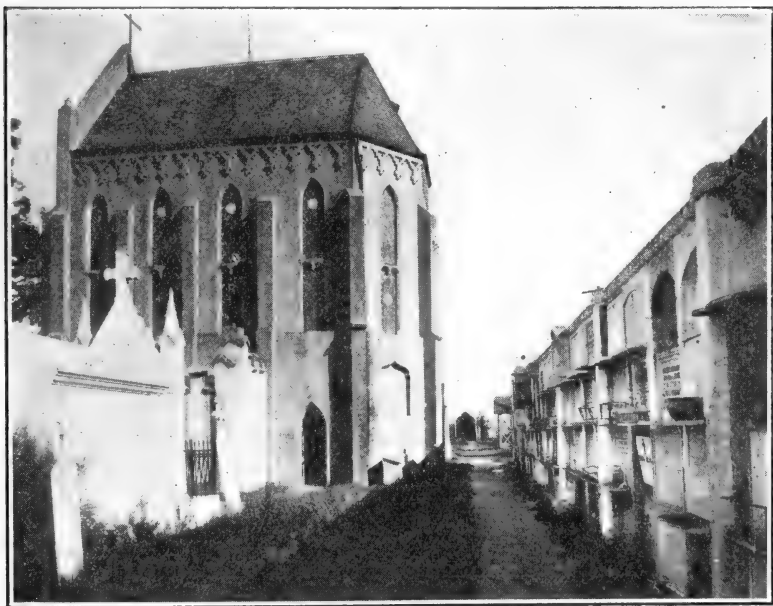
Old French Opera House, New Orleans.

ceded back to France, and in 1803 became part of the United States under the "Louisiana Purchase."

Near the city the last battle of the war of 1812 was fought between an American force under General Andrew Jackson and a British force under Sir Edward Pakenham. All of these most interesting events have left their stamp upon the city, and to the present day innumerable buildings and places associated with the earliest history of the city are preserved.

"Old New Orleans" is probably more distinctly foreign in appearance and general atmosphere than is any city in this country; while the modern part of the city has all the appearance of progress and development that are to be found in our most advanced metropolitan cities.

The Cabildo, or Spanish Court Buildings, where the transfer of the Province of Louisiana from France to the United States took place December 20, 1803, are yet in a state of perfect preservation, and are now occupied by the Louisiana Historical Society, which uses the buildings for a State Museum, that contains one of the most interesting collections of historical paintings and relics to be found. Between the two buildings there stands the St. Louis Cathedral, rich in historical associations of the Church of early American Colonial days. Close by will be found the home of O'Reilly, the bloodthirsty, picturesque Spanish Captain-General, occupied by him in 1700. There is also the "Haunted



St. Roch's Chapel and Cemetery, New Orleans.

House," made famous by Cabell, and at different times occupied by Lafayette, Marshall Ney and Louis Phillipe.

Just outside the walls of the old city, now preserved as a public park, is Congo Square, where bull fights were held in the days of the Spanish régime and voodoo dances in slavery days.

The old "Absinthe House," famous at one time as the home of Lafitte, the Gulf Coast pirate, has since 1826 been occupied by the same family, which has used it as a place for dispensing the alluring French drink.

The French Market, where tourists love to make early morning pilgrimages and drink that celebrated coffee, the flavor of

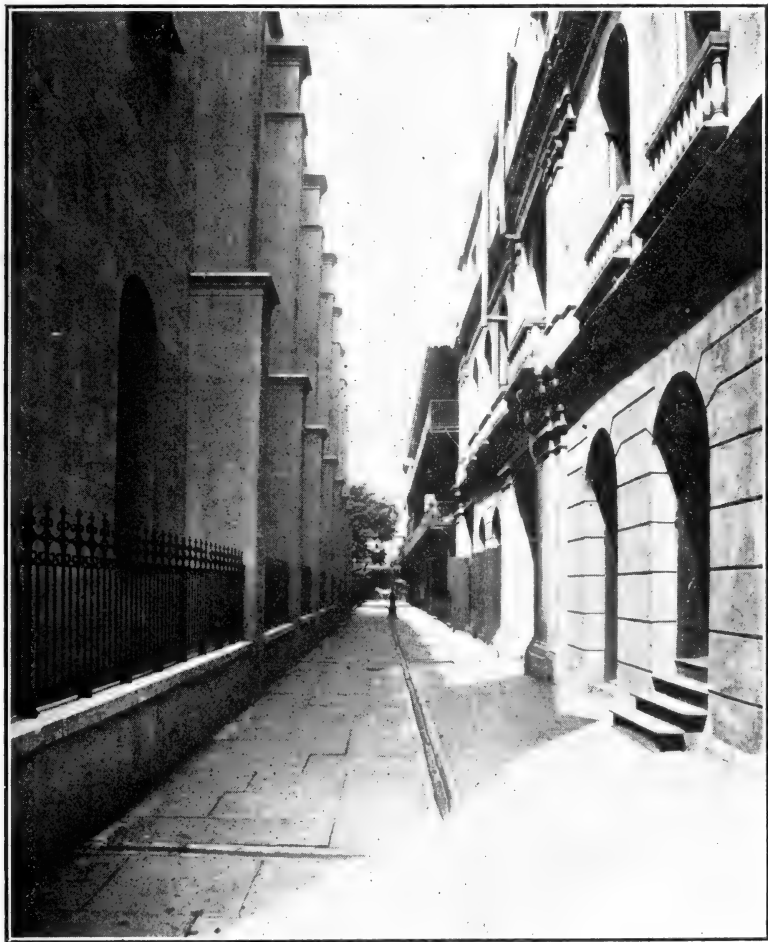


City Park Avenue, near Duelling Oaks, New Orleans.

which can be found nowhere but in New Orleans, is one of the world's most famous market places—of early colonial architecture, built to stand for centuries—it is indeed one of the most interesting and unique places to be found anywhere. Fruits, vegetables, meats and fish of wondrous varieties are here displayed as nowhere else at home or abroad.

A few other points of interest are: "Napoleon's House," erected by his American admirers to receive the prisoner of St. Helena in 1831. He was to have been rescued from his island prison by French patriots of New Orleans, but died before their vessel reached St. Helena.

Hotel Royal, formerly known as the St. Louis Hotel, built in 1816 at a cost of \$1,500,000, and once owned by the State and used as a capitol building. In the days before the war this was a



Cloister Alley, Old French Quarter, New Orleans.

great social center of Southern aristocracy ; famous statesmen and royalty having been banqueted here. The old building is replete with ante-bellum relics, and in its lobby, for many years, slaves were exchanged and auctioned, and the old auction block yet re-

mains practically unchanged. This was indeed for many years the great hotel of the South, where the old planters lived in princely style.

The French Opera House is America's oldest opera house. Here some of the most noted singers of the world have appeared, and now each season a special troupe of singers, organized in France, is brought for the opera season. Adelina Patti made her American début on this stage, and this is where the gorgeous carnival balls are held during Mardi Gras.

On the battlefield of New Orleans, a few miles below the city, and easily accessible, may be seen marks of the trenches thrown up by Jackson's soldiers when preparing to repel the British; and there still stands on the field the well-preserved ruins of the building in which General Pakenham died. Here is located the famous Chalmette National Cemetery, one of the resting places of the Federal soldiers who fell during the Civil War.

In City Park will be found the "Duelling Oaks"—famous specimens of the live oak tree—for many years the common meeting place of those who resorted to the feudal method of settling private quarrels.

One of the most romantically beautiful and unique places is St. Roche's Chapel and Cemetery, especially dear to Creole Catholics. To its shrine the maid who desires to wed within the year makes her pilgrimage.

St. Louis Cemetery is the oldest in the city, many of the Spanish and French colonists—many of royal blood are buried here.

New Orleans is indeed abounding in entertaining historical sight-seeing trips, with evidences of past Spanish and French grandeurs and ante-bellum splendors on every hand, and days spent in the French or Creole Quarter are never-to-be-forgotten pleasures to be treasured in after years.

The delegates will have many sights to see in this grand old city that will well repay them for the journey. Here they will transact the business of the Association amid novel surroundings and scenes that can be witnessed nowhere else in the United States.

TO NEW ORLEANS BY SPECIAL TRAIN.

In our October issue we proposed to A. V. M. A. conventionists a visit to Chattanooga as a lay-over, en route to New Orleans, and suggested the possibility of making it a central point from which to go in a body to the convention city. We did not go into detail as to the time to be spent at Chattanooga, feeling that we would first like to have an expression from our readers as to whether or not the plan appealed to them. We had in mind the idea of probably arriving there in the morning and leaving in the evening of the same day. There has been no expression, however, so we will not enter into any details in regard to it. President Marshall has sent us some communications received by himself and other members of the A. V. M. A. in Philadelphia, which indicate that the Pennsylvania members have been looking into the matter of transportation, evidently with a view to going in a party, and there is every reason to believe their plans could be made to dovetail with any plans that might be made by members from Canada, New England, New York and New Jersey, and make it possible to run several special cars, or possibly a special train, over a route agreeable to all parties, which would add materially to the pleasure of the trip. The route we had in mind in our previous articles have been the Pennsylvania and Norfolk and Western, and the communications to Dr. Marshall and his associates in Philadelphia have applied to the Pennsylvania and Southern Railway. The Pennsylvania out of Philadelphia, and then either via Harrisburg and the Norfolk and Western, as we had proposed, or via Pittsburgh, and Cincinnati, or St. Louis. We append the letter to Dr. Marshall.

“Referring to meeting of the American Veterinary Medical Association, to be held in New Orleans, La., December 28-31, I beg to call your attention to the excellent through-train service offered by the Pennsylvania R. R., as shown below:

“Via Washington & Southern Ry.:

Lv. West Philadelphia.....	6.52 p. m.
Ar. New Orleans, second morning.....	7.50 a. m.

“ Via Washington, Southern Ry., Lynchburg, N. & W. R. R. :

Lv. West Philadelphia..... 5.42 p. m.

Ar. New Orleans, second morning..... 9.10 a. m.

“ Via Seaboard Air Line Ry. :

Lv. West Philadelphia..... 5.42 p. m.

Ar. New Orleans, second morning..... 7.50 a. m.

“ On the first two trains shown, there are through cars operated daily, while on the third train there are through cars to Atlanta. In the event of an extra or special car, however, we could operate same on any of the trains shown.

“ Winter excursion tickets are on sale to New Orleans at rate of \$51.80. These tickets are good returning same route with limit of May 31, 1915. The regular one-way fare Philadelphia to New Orleans is \$30.90, and the party fare for ten or more traveling together on one ticket is \$25.35. The excursion and one-way fares quoted also apply via Harrisburg and the Norfolk and Western, and via Pittsburgh and Cincinnati or St. Louis. The party fare of \$25.35 applies via Washington or Harrisburg and N. & W. R. R. Party fare via Pittsburgh and Cincinnati or St. Louis is \$25.40.

“ For those in your party who may desire to return via Florida, I would suggest either the party fare of \$25.35 or the individual fare of \$30.90. This for the reason that in making through sleeping-car reservations, it will be necessary to hold through transportation.

“ We will, of course, be glad to operate special or extra through sleepers on our regular trains, or if the size of the party should warrant, would run special train from New York with the New England and New York members picking up the Philadelphia people here.

“ For your information I give below individual fares from New Orleans to Florida points, returning to Philadelphia :

New Orleans, La., to Tampa, Fla..... \$20.82

Tampa to Jacksonville, Fla..... 5.80

Jacksonville to Philadelphia, Pa., via either road.... 23.90

"The lower berth rate from Philadelphia to New Orleans is \$7.50, upper berth \$6 and the drawing-room \$21."

We also publish a letter from the Southern Railway Company to Dr. D. B. Fitzpatrick, of Philadelphia, who has been looking into the matter of transportation for the Pennsylvania members.

"Referring to your call at this office yesterday, beg to advise the regular one-way fare Philadelphia, Pa., to New Orleans, La., is \$30.90, lower berth costing \$7.50, upper berth \$6, stateroom \$21 and drawing-room \$27 between these points, no less than one and one-half railroad tickets being accepted in each stateroom and no less than two full tickets, or their equivalent, in each drawing-room.

"The party fare between Philadelphia and New Orleans is \$25.35 each way per capita for parties of ten or more traveling together on one ticket.

"During former seasons winter excursion tickets have been on sale from Philadelphia to New Orleans and return for \$51.80, these tickets going on sale about November 1 and being sold every day until April 30, return limit May 31, stopovers being permitted going and returning within final limit, and it is expected that this same fare will apply again the coming winter.

"It is possible that special fares will be arranged to New Orleans and return for this meeting, however, up to the present time we have no advice as to same, but if such fares are authorized, we will advise you accordingly.

"We operate three express trains daily, carrying through Pullman sleeping-cars from New York, Philadelphia and Washington to New Orleans without change, as follows:

	No. 35	No. 41	No. 37
Lv. West Philadelphia..	3.30 a. m.	5.42 p. m.	6.52 p. m.
Lv. Washington	8.50 a. m.	10.10 p. m.	10.45 p. m.
Ar. New Orleans.	8.55 p. m.	9.10 a. m.	7.50 a. m.
	next day	2d morning	2d morning

"Dining cars—service a la carte, on all trains.

“Trains No. 35 and No. 37 run via P. R. R. to Washington, Southern Railway to Atlanta, West Point route to Montgomery and L. & N. R. R. to New Orleans; train No. 41 via P. R. R. to Washington, Southern Railway to Lynchburg, Norfolk & Western Ry. to Bristol, Southern Railway to Chattanooga, Alabama Great Southern R. R. to Meridian and New Orleans & Northeastern R. R. to New Orleans.

“Train No. 37, New York and New Orleans Limited, carries library-observation car, club car and drawing-room and state-room car.”

The communications make it evident that the cost from Philadelphia to New Orleans is practically the same, whichever route is chosen, and also that it is quite possible for the Canadian, New England, New York, New Jersey and Pennsylvania members to arrange a “special” if they can get together on the route after leaving Pennsylvania, and if the stopover at Chattanooga is a desirable feature (even if it is only possible to spend a few hours there), that, too, can easily be included. Secretary Mayo has also been busy in arranging plans for the transportation of members from the western states, as will be seen by a communication under the caption of *New Orleans Route from Chicago*, published on page 209 of this issue, in which he also makes provision for those who may want to go by way of Chattanooga. We would urge therefore, that all those members west of Chicago, or that are on the lines suggested by Dr. Mayo, express their desires in regard to transportation promptly to him, and that all members who desire to go over any of the routes that have been discussed in the REVIEW as applying to eastern members, write immediately to President Marshall at 39th street and Woodland avenue, Philadelphia, Pa., stating which way they would like to go, so that he can get a consensus of opinion, and be able to make arrangements accordingly. If any have become interested in our suggestions in regard to the Norfolk and Western in the recent numbers of the REVIEW, they are reminded that by that route they leave New York via the Pennsylvania Railway, getting onto the Norfolk and Western lines in Virginia. For

any members who may want to spend further time in sight-seeing *after* the convention, the United Fruit Company of New Orleans offers the steamship Turrialba, which will sail from New Orleans on January 2, at 11 a. m., for a cruise to Panama Canal, Costa Rica and Havana, on the following schedule:

	Hours at Sea.	Hours in Port.	Distance Traveled, in Nautical Miles.
Jan. 2—Lv. New Orleans, Saturday, 11 a. m. ....	....	....	....
Jan. 7—Ar. Colon, Panama, Thursday, 7 a. m.	116	....	1,382
Jan. 9—Lv. Colon, Panama, Saturday, 4 p. m. ....	....	57	....
Jan. 10—Ar. Limon, Costa Rica, Sunday, 7 a. m.	15	....	191
Jan. 11—Lv. Limon, Costa Rica, Monday, 9 p. m. ....	....	38	....
Jan. 12—Ar. Bocas del Toro, Tuesday, 6 a. m.	9	....	60
Jan. 13—Lv. Bocas del Toro, Wednesday, 8 p. m. ....	....	38	....
Jan. 17—Ar. Havana, Cuba, Sunday, 6 a. m.	82	....	970
Jan. 18—Lv. Havana, Cuba, Monday, 5 p. m. ....	....	35	....
Jan. 20—Ar. New Orleans, Wednesday, 5 p. m.	48	....	588
	270	168	3,191

We merely mention this, but earnestly urge that you give the matter of transportation your immediate attention if you desire to go to the south in a party such as went to the coast in 1910; a trip that will remain a pleasant memory for all time.

FOOT AND MOUTH DISEASE AGAIN IN THE UNITED STATES.

For the fifth time in a period of forty-four years this European disease has found its way into the United States, at intervals of ten, twenty-two, six and again six years respectively. Six years ago it made its appearance in Michigan, New York, Pennsylvania and Maryland. This present outbreak seems to have begun in Indiana and Michigan, where vigorous measures were immediately begun to stamp it out. That is the term, *stamp it out*. For while it seems always to exist to a greater or lesser extent in some part of Europe, the United States Bureau of Animal Industry never allows it to exist long in this country.

In the first place the perfect organization of this bureau of the federal government and the efficiency of the members of its force, makes that feat possible; and in the second place they fully realize the absolute necessity of its immediate extermination; as if it gained any material headway, stamping it out would not be an easy task. Four times in the past they have demonstrated their ability to rid the country of this scourge, and the bureau is naturally advancing with the times in its equipment and organization, so that we may feel comfortably confident of its speedy eradication on this, its fifth visit to our shores. With this end in view, the four counties in which it was discovered to be present, were immediately placed under rigid quarantine by the federal government; interstate shipment, not only of cattle, sheep and swine from those counties, but also of hay, straw and other fodder being strictly prohibited. Transportation companies have also been required to disinfect all cars which have been used for transportation of live stock from the infected areas. In addition to these measures taken by the federal government, it is expected, as in previous outbreaks, that the state authorities will co-operate by placing quarantine on individual farms where the disease has been discovered. The headway that this disease gained in New England, twelve years ago, before it was finally suppressed, has clearly demonstrated the necessity for rigorous action at the very start and no let-up until it is exterminated. The 1908 outbreak was dealt with in that manner, and the speedy annihilation of the present epidemic is assured. All veterinarians should be especially observant at this time, and on the lookout for the possible appearance of this disease in their communities.

BE CAREFUL.*

The death of Dr. Richardson, notice of which is given in another column of this journal, and which was due to an infection sustained while holding a necropsy over a cow which was suspected to have died of anthrax, emphasizes the fact that none

* *Denver Medical Times—Utah Medical Journal—Nevada Medicine*, October, 1914.

Note.—The obituary notice on page 217 of this issue was also taken from the same periodical.

of us can be too careful in the handling of any suspected cases of infection, no matter what they may be. Not only in veterinary, but in human practice does this hold good.

While it is probable that Dr. Richardson observed all ordinary precautions to protect himself, still he became infected. We have seen men in human medicine become victims of infection, even though ordinarily careful. Some years ago an office associate of ours, in cleaning an urethratome, accidentally cut the forefinger of his left hand with the blade thereof. The finger was properly dressed, but in spite of this fact his attention to a case of syphilis, during which he had to treat and dress a chancre, resulted in an infection, from which he died a few months later, after having lost his mind through formation of cerebral gumma. We have seen operator after operator, working in simple pus cases, as well as specific infections, become infected through lack of care in protecting themselves. We have seen men infected through the making of simple examinations of members of the restricted district, and all through lack of proper protection of themselves.

It is probable that no man, or woman for that matter, carries a sound epidermis at any time, and more especially is this true of the hands. We may not notice the slight abrasions which so frequently occur, but they are almost, if not quite, invariably present, open and ready for the invasion of infecting agents. In working, both in the dead and recent subjects, we are liable to greater or less abrasions of the hands at all times and these members should invariably be covered, and well covered. Even though there may be no appreciable infection present, there is none the less reason for self-protection, as we know not what we may encounter.

Time was, when an anointing of the hands with some stiff grease was thought to be all that was absolutely necessary, but we have seen infections follow such protection and to such an extent as to, within our own mind, make things of this sort worthless. It was also thought, until very recently, that the cauterization of suspected points of infection guaranteed immunity, but

it is now known that such procedure carries no such absolute guarantee.

The only way in which one may be guaranteed absolute immunity is through covering the hands, or other exposed parts, with something of an absolutely impervious sort. The surgeon, in that his patient may not meet with possible infection from the hands, covers those members with rubber gloves. By so doing not only does he protect his patient, but himself as well. He furnishes an impregnable barrier to possible infection carriage, both to and from himself, thus offering a double protection. He who performs necropsies likewise should protect himself. He who works in the face of possible infection should never be without his rubber gloves, or other proper protectives.

Recently a hand varnish, practically a flexible collodion, has been suggested, to be employed instead of gloves or other protectives, and for the reason that such varnish does not interfere with tactile sense, as much as does the thick rubber over the finger tips, as well as for economic reasons. If it be possible to thoroughly cover the hands with such protective, the suggestion would be ideal, as it would do away with the possible tears in rubber gloves, as well as their frequent replacement, with incident cost. The varnish is easily applied and removed, a mixture of ether and acetone, sufficing to accomplish the latter. But is such a covering invariably impervious? We have noticed, in small applications of collodium, that it is liable to crack and peel off the skin surface. If this is true of small areas, may we not anticipate a like condition when the entire hand is involved? Of course, such cracks may be repaired, but possible infection might follow prior to the making of such second applications of the varnish, however, the idea is worth while and our objections may not be made on solid ground.

We all know that rubber gloves are liable to tear, but if one has a finger stall at hand, he can immediately protect himself therewith and proceed with his work. If a tear comes in the glove, other than in the finger, a new glove should be donned at once. In doing necropsies, and especially in the face of suspected infec-

tions, the gloves used should be of the heavier sort. The tactile sense is not required to as great an extent in this class of work as in that on recent subjects and where repairs are to be made, and consequently protection is the matter of paramount importance.

In the death of Dr. Richardson, a man of more than ordinary physical vigor, we are giving an example of what may happen to any of us, unless we observe all precautions in self-protection. If we go on handling cases without a barrier between ourselves and our subjects, we may, sooner or later, chronicle like happenings among our doctors of human medicine. Protective agents are not expensive and even though we may be obliged to obtain a new pair of gloves for every case, let us do it and protect ourselves. In addition to the gloves, let us always carry a goodly supply of finger stalls, so that we may immediately repair finger tears therein. In addition to the gloves, we should always carry a supply of collodion, or other soluble and flexible hand varnish in our emergency grip, for in an emergency we might find our gloves faulty and be obliged to rely upon other protective agents. Let the rubber glove habit become a fixed one and never be without at least one pair in your grip. If you are doing much, if any post mortem work, have a second, and heavier pair with you.

Such action will not only give you a greater sense of personal security, but will convey to the minds of your patrons that you are a careful and painstaking physician; that if you will properly care for yourself, you will do likewise for your patient.

COMPLETE PROGRAMME, HOTEL HEADQUARTERS AND MEETING PLACE.—We had hoped up to the last moment to be in possession of full particulars in regard to programme, meeting place and hotel headquarters of the A. V. M. A. at New Orleans, for publication in the present issue; but in the end had to go to press without it. The December issue will be ample time however, as the meeting does not occur until the end of the month.

ORIGINAL ARTICLES.

FILTERABLE VIRUSES.*

BY PROF. K. F. MEYER, BERKELEY, CAL., DEPARTMENT OF PATHOLOGY AND BACTERIOLOGY, UNIVERSITY OF CALIFORNIA.

I understand that my duty as reporter on filterable viruses consists in indicating and defining the principal points for discussion, rather than in undertaking a full discussion of them, myself.

In reviewing the achievements a remarkable advance is noticeable in the last four years, but one regrets that most of this work has not been carried out systematically and that, therefore, many facts reported are not available for comparison or conclusion. Confronted with the immediate, practical application of the results, the tendency in the study of filterable viruses of animal diseases has been in the direction of sanitary control and eradication of the diseases caused by them.

The question of *immunity* and the methods of *immunization* in these epidemic diseases have been rather superficially studied, and the biology and morphology of the filterable viruses have been treated more from a comparative point of view. Most of the facts have already been collected by MacFadyean, Loeffler, Doerr, Vallilo, Lipschutz, Wolbach and others, in such a masterly manner that I prefer to specify particularly the points with which I am personally familiar and which seem to me to have considerable bearing in the advancement of this new science.

The study of filterable viruses is, like any other part of science, attended with considerable technical difficulties, and the experimental results obtained depend largely on the ingenuity of the experimentator. Inasmuch as the process of filtration

* According to a report for the Tenth International Veterinary Congress, 1914, in London.

has been used as a means of classification, general uniformity in the methods applied should be attempted, if in any way possible.

Roux, Remlinger, Borrel, Marchoux, Schmidt, Rosenthal and others have shown that the process of filtration depends on various physical conditions of the filter candles or their diatomaceous earthen substitutes. The rules which have been suggested by Marchoux for the process of filtration in establishing the filterability of a disease-producing organism have uniformly been adhered to in recent investigations. For some filterable viruses comparative investigations should undoubtedly be undertaken, and the original experiments, on which our classification was based, should be repeated from a modern viewpoint. This is particularly true in the case of cattle plague, Aujeszky's disease, lyssa, etc. For the first-named disease a remark by C. T. Martin (London), made at the last medical congress in London, is at hand, in which he refers to some experiments of Todd, which showed that the virus of cattle plague was not filterable. Bertarelli and Melli found, in supporting the findings of Zwick, that the micro-organisms of pseudolyssa was not present in the filtrates. For the virus of rabies the different views as to the filterability are expressed in the works of Remlinger, DiVestea, Poor and Steinhardt, Marie, Bertarelli and Volpino, Celli and duBlasi. The first-mentioned writers obtained positive results regularly; the last three failed to pass the virus through Chamberland candles or even through Berkefeld candles. These facts show clearly how varying the results can be when using different materials for filtration. Poor and Steinhardt obtained 100 per cent. virulent filtrates with the Berkefeld filters and 75 per cent. with the Chamberland F. filter when using gland virus (sub-maxillary glands were placed in distilled water and the virus aspirated by suction). These results suggest that the virus was in a freer condition in the glands than in the fixed brain virus used by DiVestea, who obtained only 25 per cent. of positive results with a Chamberland filtrate. It is absolutely necessary in all filtration experiments that the time, the pressure, the tem-

perature, the dilutions of the filtrates and the type of candle be carefully recorded. The most careful investigations of Borrel, Rosenthal and Doerr on the various filter candles have clearly shown that the width of the pores and the brands of the various firms are frequently far from being accurate and that a careful standardization of any candle used for exact comparative work is a prerequisite. By following the suggestion of Doerr in working absolutely quantitatively with the virus to be filtered, as well as with the filtrate, I have also found that the Chamberland candle F frequently permitted more virus to pass than the Chamberland candle B under the same experimental conditions. Several attempts to use the various methods of Bechhold, Marchoux and Rosenthal in standardizing the filters have given very unreliable data, but I hope to take up the question again with the filter plates prepared by Rosenthal's method, which permits far more accurate graduation of the width of the pores.

The dilution of the virus to be filtered is absolutely necessary, and many failures have been observed by the author in his studies with pleuropneumonia and hog cholera. When working with mixtures of the virus—which are rich in albumen—according to works of Bechhold, Rosenthal and others, adsorption of the proteins, peptones, etc., always takes place in the filter pores and, finally, the filtration is actually through a colloid filter, which frequently prevents the passage of the disease-producing virus. In our experience a dilution of 2:100 or 1:100-150, with saline, is the proper concentration for the virus to be filtered, when a serum virus is used. It is advisable—particularly when the virus has been obtained from tissues—to begin the actual experiment by coarse filtration through filter paper, or, better, through sand or loose asbestos filters. Very flocculent, pleural exudates from cases of pleuropneumonia should always be prepared for filtration in this manner.

In 1908, Giemsa and Prowazek and Beaurepaire Aragao reported the use of so-called colloid filters for the study of filterable viruses. Bechhold, in describing his methods of ultrafiltration, suggested its possible use for the study of filterable

viruses. In some very interesting experiments Prowazek and Beaurepaire Aragao demonstrated by means of a simple technique, in which the second filter consisted in a 3 per cent. agar colloid membrane, that the virus of variola could be concentrated in pure form. The upper layers of the agar contained the specific, coccus-like bodies; the filtrate, a so-called "ultra-filtrate," did not contain these elements and yet was virulent in tests on rabbits.

Quite recently v. Prowazek has improved the apparatus for his "ultra-filtration," and it is to be hoped that more experiments along these lines will be carried out. Giemsa and v. Prowazek found the fowl plague virus retained by a Pukall filter candle, which was covered by a 3 per cent. agar colloid layer. *Sieber* has applied the ultra-filtration to the virus of African horse sickness and found that the causative agent will not pass a 1 per cent. agar or a collodion or celloidin layer; however, according to *Kuhn*, his experiments are of no value, as the time of observation did not cover the necessary 45 days, since the horses were tested on the fiftieth day for a possible immunity (and not as it was done in the experiments: on the ninth, twenty-fifth and eighth day, respectively). Poor and Steinhardt could not filter the purified and freed rabies' virus through collodion sacs.

We have carried out numerous ultra-filtration experiments with the hog-cholera virus and found that it will pass through a 1 per cent. agar colloid layer, in very small amounts; not at all through a 2 per cent., and never through a 3 per cent. agar or through a celloidin or collodion membrane. Similar experiments by the writer, using Bechhold's ultra-filter, also proved the statement of Betegh that the hog-cholera virus will not pass through a 4 per cent. acetic acid collodion filter. The work of v. Betegh is not free from criticism, as his reports fail to show the necessary controls for the virus which had been used. The rather complicated preparation of the ultra-filters (after the method of Bechhold), combined with the disadvantages of their not being in a condition to be sterilized, will only in rare cases

invite comparative studies. Furthermore, the concentration of the colloids in the membranes must be high and of a considerable density to insure a filtrate which is even free from bacteria; under these conditions I could observe that the colloids lead to an unnecessary adsorption of the filterable viruses and, naturally, sterile filtrates were always obtained. I agree with Doerr that the ultra-filters of Bechhold will not bring much more information on the nature of filterable viruses. The method of v. Prowazek is very simple and will undoubtedly prove to be of great value for the comparative studies, of which a few examples have been cited.

The conception of an "invisible or ultra-microscopical" virus has been entirely abandoned, since Bordet, Dujardin-Beaumetz, Borrel, v. Prowazek, Paschen and others have explained that some of the filter passers at least can be demonstrated microscopically. The filterability of most of the viruses is sufficient evidence for concluding that all filterable viruses are corpuscular, inasmuch as they are retained by the finer Kitasato filters, through which colloidal particles freely pass. Some of the supposed filterable viruses can be seen in specially fixed and stained preparations, either in form of so-called "cell inclusions" or "elementary bodies."

Cell inclusions have been known since 1892 through the work of Guarnieri, who called attention to peculiar bodies in the protoplasm of epithelial cells in vaccinia. The Negri bodies in lyssa, the Benda bodies in epithelioma contagiosum, the Schiffmann's corpuscles in fowl plague, etc., all belong in the class of *cellular changes*, which, according to the views of our best protozoologists (Borrel, v. Prowazek, Hartmann, etc.), represent the products of reactions of the cells towards the invading parasitic virus.

These cell inclusions are characteristic for the particular virus by which they are caused and are particularly found with regularity in the proliferating ectodermal cells of "distinctly dermatropic" diseases (Lipschutz) and are, therefore, of diagnostic importance in vaccinia, epithelioma contagiosum and

other diseases. But also in neurotropic diseases the degenerated cells derived from the ectoderm show similar bodies; we may mention here rabies and fowl pest only. Quite recently Uhlenhuth and Boeing have reported the existence of cell inclusions in hog cholera in the conjunctival epithelium, and Kuhn in African horse sickness in the renal epithelium; these are the first findings of inclusions in acute septicemic diseases caused by filterable viruses. The inclusions are most readily seen in proper preparations in the cytoplasm of the cells, compressing the nucleus very distinctly; in epithelioma contagiosum, for example, their structure is a very complicated one, and therefore the views concerning these bodies are very numerous.

The author has seen only twice, in scrapings from the conjunctiva of hogs suffering from hog cholera, the above-mentioned "trachoma-like" bodies of Uhlenhuth, stained after Giemsa; large, blue-violet bodies of oval shape, surrounding the nucleus, consisting of blue plastin-like substance, contained numerous granules which stained a deep purplish-red. The number of hogs systematically examined has been very small, and therefore cannot express a conclusive opinion. In numerous sections of kidney tissues from spontaneous and experimental African horse-sickness cases, I have failed to find the inclusions described by Kuhn.

The demonstration of the Negri bodies has been used by the author for many years for the diagnosis of rabies, and their constant presence in hydrophobia was tested in at least 1,500 examinations of various nervous tissues. They are specific for the disease. The difference in size and distribution are most striking. In cattle the Negri bodies are very large and numerous in the hippocampus; in the horse they are very small and usually in very confined areas; in cats they are mostly found in the Purkinje cells of the cerebellum. Luzzani-Negri has shown that the failures to demonstrate Negri bodies in cases of rabies do not exceed 4 to 5 per cent. (4.07 per cent. in 4,961 carefully tested cases).

The Lentz' distemper bodies, which are small and irregular

in shape, are frequently extracellular in the hippocampus, but as far as our observations were concerned on about twenty dogs in Philadelphia, they were not always present and were frequently few in number. These bodies are quite distinct from the Negri bodies and can never be mistaken by the trained observer. According to the researches of Borrel, Hartmann and others, not all the cell inclusions are the parasite causing the disease, but are cellular reactions which, for example, in rabies not only deform, but also encapsulate the invading micro-organism. In hog cholera sufficient evidence is at hand that also the blood serum, in which the cell inclusions are entirely absent, is infectious. The filtration experiments with lyssa by Remlinger, Poor and Steinhardt and others have shown that the Negri bodies undoubtedly fail to pass the filter, and yet the filtrate is virulent. V. Prowazek denies, further, the possibility of the inclusions being the parasite; owing to their homogeneous and polymorphous structure, they are not sufficiently differentiated to be grouped with any developmental stages of protozoa. On the other hand, the recent publication of Bosc on the life cycle of the parasites of sheep-pox will demonstrate, if confirmed, the relation of the protozoa to the filterable viruses.

Summarizing the views concerning the "cell inclusions" found in filterable viruses, one can state that they are of diagnostic importance, but do not represent a developmental stage of the micro-organism of a filterable virus.

In 1907, v. Prowazek, in reporting on his findings in trachoma, expressed the view that the small, round, well-defined bodies, barely visible with our optical systems, represent the virus. He called these structures "elementary bodies." They form, together with the specific products of cellular reaction, the so-called "Chlamydozoa." In all diseases in which the Chlamydozoa have been demonstrated, the causative agent was found to be filterable. They form, therefore, a group of filterable, but yet visible, organism causing disease, and are the so-called *Strongyloplasma* of Lipschutz; this group does not belong to the bacteria or to the protozoa. The observations thus far made

on these coccus-like bodies do not permit of final, conclusive deductions. It has already been pointed out that in the study of filterable viruses, aside from remarkable analogies, very pronounced contrasts may exist and are constantly noted; the same is true of the "Chlamydozoa," and I think that we are not justified in concluding that a cause of a disease is filterable when cell changes resembling those produced by *Strongyloplasma* have been demonstrated. The work on "Anaplasmosis" and Borna's disease are only two examples to illustrate this statement. The constant presence of small, spherical, coccus-like bodies in tremendous numbers represent—in some diseases at least—the causative agent. This has been particularly proven through the splendid work of v. Prowazek and Paschen in vaccinia and variola; in sheep-pox by Borrel; in epithelioma contagiosum by Lipschutz; and in rabies by Negri. That the granular bodies—which have been described by Sieber in African horse sickness, in hog cholera by v. Betegh and also by the author—can be interpreted in a similar manner is highly improbable, and the skepticism of Huntemuller, when discussing the foot and mouth disease bodies, is quite justified. However, inasmuch as v. Betegh and Muller describe, for foot and mouth disease, similar bodies which do not correspond in their microchemical reaction, a renewed effort should be made to investigate these inclusions, for which ample opportunities are offered in Europe. Huntemuller considers the granules he found in the contents of the blebs in foot and mouth disease to be "colloid granules" which were precipitated on account of the destruction of the cells by the virus. He even questions the variola and vaccinia bodies. I have seen similar granules during my studies on pleuro-pneumonia and hog cholera, particularly when using the enrichment method of v. Prowazek with colloid filters. For the latter disease these granules could be demonstrated in the urine, which proved by experiment to be highly virulent; a possible misinterpretation of serum granules was eliminated as much as possible by selecting this type of virus. The careful studies of v. Betegh also indicate that they are in some way connected with the virus of hog cholera.

A very interesting report by Noguchi and Cohen on the cultivation of so-called trachoma bodies now suggests a way to prove the identity and specificity of cell inclusions and elementary bodies. The transformation of the bodies in the culture and the morphological features of the isolated organism are strikingly similar to the well-established facts, and every effort should be made to prove or disprove their findings.

All attempts have so far failed to demonstrate the "invisible" viruses, like rinderpest, pernicious anemia, etc., by means of the ultra-microscope or microphotography with ultra-violet rays, according to Kohler. Celli and duBlasi report only failures with the ultra-microscope in agalactia contagiosa, as does Rosenthal for fowl plague. Probably numerous, similar unsuccessful attempts have never been reported for other filterable viruses.

The fact that Rous and Murphy and Henke and Schwarz have shown that typical malignant tumors can be transplanted by filtrates of the tumor mass to their respective hosts opens a new era in the study of tumors. What importance this work may have on the pathology, and particularly on the Chlamydozoa theory, cannot as yet be decided. In any case the work of Borrel, Farmer, Mooreaud, Walker and others show connecting links between tumors and infectious diseases. Perhaps further investigations will show that the tumor described by Rous is not a true neoplasma but a granuloma; the intermediate stage between classic bacterial granulomata and so-called true tumors may have been found. Naturally, the chicken tumors thus far studied would, in many respects, be more closely related to the neoplasmas than the granulomatas.

As soon as the views concerning the corpuscular character of filterable viruses had gained sufficient ground, experiments were undertaken to concentrate the various organisms by centrifugalizing. These experiments have been successful only in rabies, fowl plague and vaccinia virus. Chauveau and v. Prowazek found that the vaccinia virus, after prolonged standing, sediments to such an extent that the upper layers of the fluid bulk

were inactive. Remlinger, by centrifugalizing, filtered rabbit-brain emulsion in distilled water and found that the supernatant clear fluid was inactive. Similar experiments by Landsteiner and Ross demonstrated that the virus of fowl pest was concentrated with the sedimented red blood cells when infectious blood was centrifugalized—they could not decide whether the virus was only attached to the blood cells or whether it was intracorporeal. *Sieber*, in experimenting with the virus of African horse sickness, could not concentrate the virus by centrifugalizing; the same results were obtained by Uhlenhuth and his collaborators when working with hog-cholera virus (blood and urine).

Quite recently, Dinwiddie concludes from some experiments in centrifugalizing citrated hog-cholera blood, that the virus of this disease can be sedimented. These assertions stimulated further investigations. K. F. Meyer reported in 1912 that he had found that the red blood cells retain the virus of hog cholera even after twelve careful washings with saline solution; he pointed out at that time the deficiency of Dinwiddie's technique, as in all of his experiments the last wash-water produced the disease, and no quantitative, comparative tests with the filtrate and filtrans* were carried out.

In the experiments conducted by the author on the Experimental Farm of the Pennsylvania State Live Stock Sanitary Board, it was clearly shown that the virus will become "sedimented" with the blood cells by centrifugalizing, and that it is not removed by washing. However, it is not simply a process of sedimentation, as the supernatant fluid contains the virus as well, even when collected with the greatest precautions. Prolonged centrifugalizing of plasma absolutely free from haemoglobin does not show any sedimentation. In continuation of these experiments, which were several times repeated, it was further noted that the hog cholera virus will attach itself to any blood cells (normal hog, rabbit, sheep) in such a manner that repeated washings will not remove it. The last wash-water being, in all of these experiments, either free or partially free

* "Filtrans," virus to be filtered.

from virus. The first requisite is hardly possible to obtain, as, on foreign blood cells particularly, the virus seems to attach itself not as solidly as on hog cells.

Sieber reported that the virus of African horse sickness, after ten washings, was present with the blood cells.

Landsteiner found that the virus of fowl pest is fixed to such an extent to the fowl and rabbit blood cells that the serum could be deprived of the micro-organism by centrifugalizing. These observations point to the existence of a common cause for both viruses, namely, a physico-chemical process. Without going into details, the assertion is made that the corresponding lipid substances of the protoplasm of the parasite and of the membrane of the blood cells melt together, causing the inseparability of the virus from the blood cells observed in the experiments. Similar conditions are met with in protozoan diseases; for example, in East Coast Fever the parasite is attached to the blood cells in the same way as the lime particles to the oil globules of a lime-oil suspension. The relation of observations of Theiler and Baldrey on rinderpest virus to the above-mentioned experiments is not known. It is a fact that with clear serum one is incapable of producing the disease, the virus being suspected of location in the red blood cells.

The explanations already given for the hog-cholera virus warrant a renewal of investigations of these statements, which, if the observations of Braddon are confirmed, will undoubtedly be of greatest interest.

Kolle and Turner have already disproved, experimentally, the supposition that the cattle plague virus is in the blood cells, by demonstrating that even hemolyzed blood fails to pass through filters, the virus being also unfilterable under these conditions. The recent work of Nicolle and Adil Bey, Ruediger and others have shown that only the virulent peritoneal transudate, obtained by injecting saline solution in the abdominal cavity of sick cattle, will give a virulent filtrate. The adsorption experiments of Kraus, v. Eisler and Fukuhara can probably be explained in a similar manner. These experiments are of con-

siderable importance in the concentration of filterable viruses and have been successful only for rabies, fowl plague and vaccinia. All attempts of Uhlenhuth and his collaborators to cause adsorption by kaolin, charcoal or oil have failed.

Cultivation of Filterable Viruses.—The number of successful attempts in cultivating the filterable viruses is very small, but the last years have shown that they can be achieved by using certain special precautions and, particularly, especially devised culture media. That cultures would not help materially in the solving of the pending questions on the biology of the filterable viruses, but would be of tremendous economic importance in the preparation of immune sera, is self-explanatory. From the reports of successful cultivation we exclude all the saprophytic micro-organisms and consider here the true parasitic viruses only.

The only filterable virus which has been readily cultivated is the virus of pleuropneumonia. The process of cultivation is, in our experience, so successful—as has been shown again, quite recently, by Poppe—that it can be used even for diagnostic purposes. The description of the morphologic appearance of the cultured organism, the so-called "*Astrococcus mycoides*," given by Bordet, Dujardin-Beaumetz, Borrel, Jeautet and Jouan, differ somewhat. According to the author's very superficial study with African pleuropneumonia virus, he prefers to compare the organism he found in unstained and stained preparations (Giemsa and Loeffler) with the granule-like bodies he saw in smears of the poliomyelitis virus, demonstrated to him by Noguchi. However, since the publication of Huntemuller has demonstrated how easily colloid granules are stained, I doubt if I have actually seen the micro-organism, except in whole culture.

Marchoux and, later, Landsteiner and Berliner have cultivated the fowl-pest virus on 2 per cent. glucose fowl blood agar. The presence of the virus being revealed only through the infectiousness of the subcultures carried beyond any reasonable limit of dilution from the original. The cultivation of the poliomyelitis virus by Flexner and Noguchi was only a step to the culture of the rabies virus by Noguchi. Both cultures were only

obtained by using the well-known method of the Japanese investigator for the cultivation of spirochaetes under strict anaerobiosis. The description of the culture of the lyssa virus is very brief so far and, if the criticism of Volpino is correct that lipoid bodies can be mistaken for the developmental stages of Negri bodies, one anticipates with interest the further publications of Noguchi on the study of rabies.

The report of Fornet, on a culture of variola, has not been confirmed thus far, and in regard to the cultivation of the hog-cholera virus by Pfeiler and Lentz, no information is given in their publication as to the medium or method used. Inasmuch as every worker on hog cholera has attempted the cultivation of the virus—but only failures have been reported—the publication of Pfeiler and Lentz must be accepted with skepticism until further details are known. The apparent cultivation of the foot and mouth disease virus by Siegel, Pfeiffer and others should be a lesson to every one working with filterable viruses and their cultivation.

(To Be Concluded in Next Issue.)

EASTERN LIVE STOCK SANITARY ASSOCIATION.—The fourth annual meeting of the above association was held at the State Capitol, Albany, N. Y., on October 21 and 22, 1914. The officers are Hon. Franklin Dye, Trenton, N. J., Secretary of Agriculture of that State, President; Dr. C. J. Marshall, State Veterinarian of Pennsylvania, Secretary and Treasurer; and an Executive Committee, of which Dr. A. Joly, Live Stock Sanitary Commissioner of Maine, is Chairman, and has associated with him on that important committee, Hon. Jeffrey O. Phelps, Jr., Hartford, Conn., and Dr. Louis A. Klein, Dean of the Veterinary School of the University of Pennsylvania. Members were present from Connecticut, Maine, Massachusetts, New Jersey, New York, Pennsylvania, Vermont, New Hampshire, Maryland and Delaware. Amongst the contributors to the programme representing our profession were Drs. John F. DeVine, Louis A. Klein, R. A. Ramsay, H. D. Gill, V. A. Moore and Paul Fischer. Details of the proceedings will appear in our next issue.

ON THE ACTION OF ST. JOHN'S WORT AS A SENSITIZING AGENT FOR NON-PIGMENTED SKIN.*

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Scattered through the pages of veterinary periodicals we may find occasional references to the noxious properties of St. John's Wort. Some of these are direct—*i. e.*, the writer recognizes the herb as the cause of the peculiar train of symptoms we are about to describe; in other cases their symptomatology leaves no doubt as to the exciting cause, although the writers do not refer to it.

Having had the opportunity of observing a dermatitis of non-pigmented skin due to ingestion of the herb, and having furthermore gleaned knowledge regarding it from various sources, we have, during the past year, utilized the resources of the Pharmacological and Analytical Laboratories of the H. K. Mulford Company in a somewhat detailed study of the properties of St. John's Wort, believing that the sensitization of the skin to light by means of this drug might perhaps open up a new field in pathology.

We have seen an entire herd of Holstein cattle with the white skin hanging in rags and the dark skin soft and supple as a glove, the condition being due to exposure to sunlight after eating this herb. We have observed other cases where not only the white skin but the white buccal mucosa and conjunctiva suffered acute inflammation from the same cause, and we may note in passing that some of these cases much resembled the conditions seen in foot and mouth disease.

Careful and extended personal observation has demonstrated that in the writer's field of practice—Southern New Jersey—the weed is very common, and we trust that practitioners in the dis-

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tracts where varieties of it exist will favor us by sending in fresh samples with reports of cases of dermatitis due to its ingestion.

We are instituting a careful examination of the different coloring matters contained in the herb and their relative toxicity to animals, but as the experiments will necessarily be carried over some months we have deemed it best to reserve their consideration until later.

In making this investigation we have been afforded the aid of the Mulford Research Laboratories, and we also acknowledge the kindness of the Philadelphia College of Pharmacy in placing the resources of their library at our disposal, thus enabling us to obtain many interesting ancient references to the properties of the herb. These references are of especial value for the reason that they illustrate a truth that we are all too apt to spurn—*i. e.*, that while a widely spread and long-continued popular belief in the activity of a drug may be obscured by much that is false and irrelevant, we are sure to find a kernel of truth if we but seek it. We have quoted in these references in part and have also given the tabulation of the American varieties of the plant from Britton and Brown's Botany, because we believe that the veterinarian will be glad to have under his hand a variety of information that has been somewhat troublesome to find.

DESCRIPTION.

Hypericum Perforatum. St. John's Wort. A perennial herb, abundant both in Europe and in this country, often covering whole fields, and proving extremely troublesome to farmers. It is usually from one to two feet high, with leaves which, from the presence of numerous transparent vesicles, appear as if perforated, and have hence given origin to the botanical designation of the plant. The flowers, which are numerous and of a deep yellow color, appear during the summer from June to August. The flowering summits are the parts used, though the unripe capsules are possessed of the virtues of the plant in an equal degree, and the seeds are said to be even stronger. St. John's Wort has a peculiar balsamic odor, which is rendered more sensible by rub-

bing or bruising the plant. Its taste is bitter, resinous and somewhat astringent. It imparts a yellow color to cold water, and reddens alcohol and the fixed oils. Its chief constituents are volatile oil, a resinous substance, tannin and coloring matter. As a medicine it was in high repute among the ancients and the earlier modern physicians.

Among the complaints for which it was used were hysteria, mania, intermittent fever, dysentery, gravel, hemorrhages, pectoral complaints, worms and jaundice; but it was perhaps most highly esteemed as a remedy in wounds and bruises, for which it was employed both internally and externally. It is difficult to ascertain its exact value as a remedy; but, from its sensible properties and from the character of the complaints in which it has been thought useful, it may be considered, independently of its astringency, as somewhat analogous in medical power to the turpentine. It formerly enjoyed great reputation for the cure of demoniacs, and the superstition still lingers among the vulgar in some countries. At present the plant is scarcely used except as a domestic remedy. The summits were given in the dose of two drachms or more. A preparation was at one time official, under the name of *oleum hyperici*, made by treating them with a fixed oil. It has a red color and is still used in many families as a sovereign remedy for bruises. It is commonly called red oil.—United States Dispensary, 14th edition, p. 1668.

The following varieties are tabulated in Britton and Brown's Botany as occurring in the United States and British America:

Botanical Name	Common Name	Habitat
<i>H. Ascyron</i> (Flowers June-Sept.)	Great or Giant St. John's Wort.	Quebec, Vermont, Conn., Manitoba, north N. J., Ill., Iowa, and Minn., also northern Europe and Asia.
<i>H. Kalmianum</i> (Flowers August)	.....	Niagara Falls to Sault Ste Marie, along Lakes Erie and Huron, Muskoka, Ontario and oak barrens of Tullahoma, Tenn.
<i>H. Prolificum</i> (Flowers July-Aug.)	Shrubby St. John's Wort.	Sandy and rocky soil, N. J. to Ga.; ascends to 3400 feet in Va.
<i>H. Densiflorum</i> (Flowers July-Sept.)	.....	Pine barrens of N. J. to Fla., west to Tenn., Ark. and Texas.
<i>H. Galivides</i> (Flowers July-Sept.)	Bed Straw St. John's Wort.	Low grounds Del. to Fla., west to eastern Tenn. and La.

Botanical Name	Common Name	Habitat
H. Adpressum (Flowers July-Aug.)	Creeping St. John's Wort.	Low grounds Nantucket to N. J., and Pa., south to Ga., La., Miss., and Ark.
H. Sphærocarpum (Flowers July-Sept.)	Pound podded St. John's Wort.	On rocky banks, southwest Ohio to Iowa; south to Ala. and Ark.
H. Dolabraforme (Flowers July-Aug.)	Straggling St. John's Wort.	Dry hills, barrens of Ky. and Tenn.
H. Ellipticum (Flowers July-Aug.)	Pale St. John's Wort.	Swamps and along streams Nova Scotia and Manitoba, Conn., N. J. (N.), Pa. and Minn.
H. Vergatum (Flowers July-Sept.)	Copper colored St. John's Wort.	Low grounds Del. to Ill., south to Fla.
H. Perforatum (Flowers June-Sept.)	Common St. John's Wort, Anglic Amber, Penny John, Rosin Rose Herb John.	Common save in far north and southern states. Original habitat Europe and northern Asia.
H. Maculatum (Flowers July-Sept.)	Spotted St. John's Wort.	Moist places Maine and Ontario to Minn., south to Fla. and Tex.
H. Graveolens (Flowers June-Sept.)	Mountain St. John's Wort.	Mountains of S. W. Va. and N. C.
H. Boreate (Flowers July-Sept.)	Northern St. John's Wort.	Wet soil Newfoundland to N. J. and Pa.
H. Mutilum (Flowers July-Sept.)	Dwarf or Small Flowered St. John's Wort.	Low grounds Nova Scotia to Manitoba, southern Fla. and Tex., in Va. to 3,000 feet.
H. Gynnanthum (Flowers July-Sept.)	Clasping Leaved St. John's Wort.	Low grounds south N. J., Del. to Minn., south to La. and Texas.
H. Majus (Flowers June-Sept.)	Larger Canadian St. John's Wort.	Moist soil Me. to Mich., N. J. to Neb.
H. Canadense (Flowers July-Sept.)	Canadian St. John's Wort.	Wet sandy soil Newfoundland to Manitoba, Ga., Ky., Wis., ascends to 5,000 feet in N. C.
H. Drummondii (Flowers July-Sept.)	Drummond's St. John's Wort.	Dry soil Ill. to Ga., west to Iowa and Texas.

In olden times the herb had great favor. Thus, in "Fuller's Pharmacopeia," 4th ed., 1730, it was an ingredient in a Balsamic Decoction, and in the "Collectanea" of W. Salmon, 1703, it formed part of a Traumatic Decoction. In "James' New Dispensatory," London, 1747, we find directions for the preparation of an "Oleum Hyperici" which was made by infusing the fresh tops in olive oil.

In "Thornton Family Herbal" (London, 1810), reference is made to its use in driving out devils and in hysteria and suppressed menstruation.

It is found in the section on Materia Medica in the "Edinburgh New Dispensatory" of 1794; in the "Pharmacopeia of the London College of Physicians," 7th ed., 1796; the "Edinboro Pharmacopeia" of 1774, and as an ingredient in the Theriac Andromachii in the "London Pharmacopeia" of 1772.

In American pharmaceutical literature it is referred to by Blair, in the "American Jour. of Pharmacy," ii, p. 23, and in "King's American Dispensatory" of 1871.



ST. JOHN'S WORT.

(This cut is used by courtesy of *The Country Gentleman*.)

REPORT OF A PHYSIOLOGICAL TEST OF ST. JOHN'S WORT IN THE
MULFORD PHARMACOLOGICAL LABORATORIES.

The toxicity of the sample was determined by the Reed and Vanderkleed Guinea-Pig Method. This method consists in determining the minimum amount for 250 Gm. body-weight of guinea-pig that will prove fatal within 24 hours when the drug is subcutaneously injected.

RESULTS.

The doses given represent c.c. per 250 Gm. body-weight of animal.

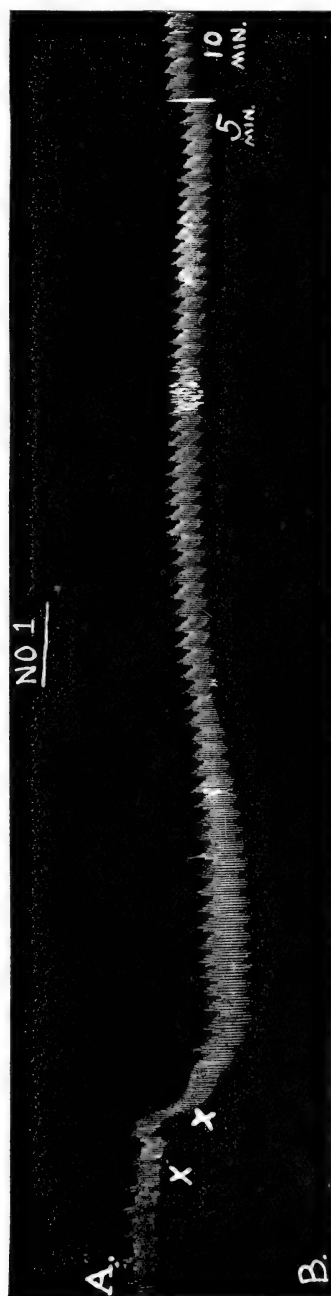
<i>Dose.</i>	<i>Results.</i>
0.05.....	Recovered.
0.075.....	Recovered.
0.08.....	Recovered.
*0.1.....	Died.
0.1.....	Recovered.
*0.1.....	Died.
0.15.....	Died.
0.2.....	Died.
0.2.....	Died.
0.5.....	Died.

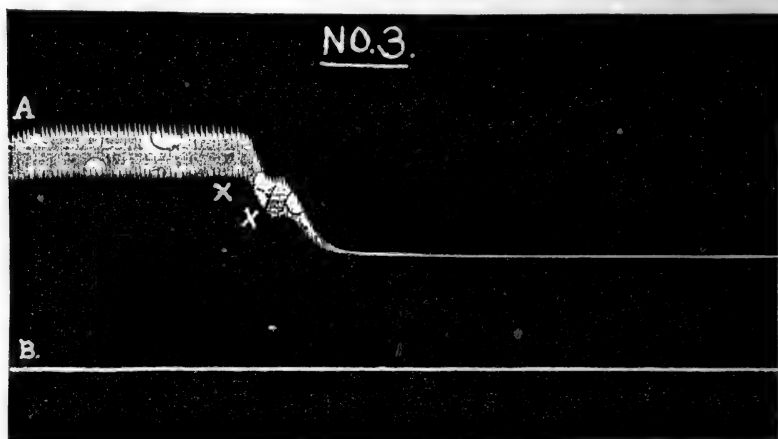
The above results show that the minimum lethal dose for this preparation is 0.01 c.c. In other words, it has a toxicity equivalent to our standard fluid extract of digitalis.

The charts on the following pages show the effect of F. E. St. John's Wort on the blood-pressure.

Tracing No. 1.—Weight of dog, 7.4 K. 1.0 c.c. of the fluid extract was injected into the femoral vein at X. Pressure recorded by means of a mercurial manometer. A = Blood-pressure, B = O line.

Tracing No. 2.—Weight of dog, 6.8 K. Injected 2 c.c. of fluid extract from X to X. The figures 5, 10, 15, etc., represent minutes after the injection.





Tracing No. 3.—Weight of dog, 7.8 K. Injected 5.0 c.c. of Fluid Extract St. John's Wort between X and X.

The tracings show that this preparation has a very toxic action on the heart. 1.00 c.c. markedly reduces the blood-pressure; 2.00 c.c. almost paralyses the heart, and 5.00 c.c. causes immediate paralysis of the heart. Respiration continued for several minutes after the heart had stopped.

Post-mortem examination showed that the heart had been stopped in diastole.

"NOTES ON THE POISONOUS EFFECTS OF ST. JOHN'S WORT" (variety *Hypericum Crispum*). By George Ray, Professor of Agriculture in the Colonial School of Tunis.

There exists throughout the entire extent of northern Tunis a St. John's Wort (*Hypericum Crispum*, L.), an entirely different species from the common St. John's Wort (*Hypericum Perforatum*) so common in France.

It is usually designated by its Arab name (Hamra)—literally red—a designation due to the color of the dried plant. We find it in cultivated and uncultivated places and in pastures.

Bonnett and Barrett found it in Cyrenia and in Asia Minor. The poisonous effects of "Hamra" have long been known in the Tunisian colonies, and its action justly feared. It attacks by

preference the bovine species, but we have seen cases of poisoning by it in goats, cattle and horses. These cases offer the curious peculiarity of manifesting themselves only in full light, and only on animals devoid of or possessed of but lightly pigmented skin. Clearly the action is photodynamic.

The symptoms are much as follows: Immobility, the animal's head falling low; the non-protected areas of skin become reddened, rapidly swollen without, usually, any general rise of temperature. In sheep, goats and cattle the ears are a common seat of the attack; they become enormously swollen, as also the eyelids.

In horses the local manifestations may be found on spots of skin devoid of pigment. The lesions quickly become the seat of acute itching, the animal biting or scratching them until the skin is torn, and the resulting excoriations often heal slowly, leaving traces of the attack for long periods, and the resulting cicatrix may remain hairless, especially on the forehead and ears. These lesions may become the seat of microbic infection (septicemia), often ending quickly in death. A common sequel of poisoning by "Hamra" in sheep is loss of sight.

As a rule, young animals are much more sensitive to the attack than are those of adult or old age. Dark-skinned animals are not incommoded and the condition is much more to be feared in sheep of light-colored fleece when the wool is short and thin.

Improved breeds are more liable to attack than the common animals of the country. We have satisfied ourselves also that white-skinned animals, stabled or otherwise protected from light, show no effects from feeding on "Hamra," and if we at once stable the affected animal on the first appearance of the symptoms it quickly regains its normal health. Indeed, this is by far the best and most successful treatment of poisoning by St. John's Wort. Unfortunately, in Tunis, it is a difficult method to employ, as the animals are often pastured far from the farm building.

Pasturage at night only presents in like manner many inconveniences. The Arabs use, with reason, solutions of tobacco or henna, which seem to render the skin less permeable to light.

The red tint caused by henna especially protects the epidermis against the noxious rays of light. Above all, we seek the destruction of the plant, a proceeding that is unfortunately well-nigh impossible, and we endeavor, as far as possible, to use animals of dark skin. We seek particularly the crosses with the Algerians, and breeding animals of white races are always selected with a view to the thickness and extent of the fleece covering the head as much as possible. Lastly, early shearing is to be recommended, allowing, as it does, a regrowth of wool before the time when accidents from this cause are most to be feared—the period following the reaping, when the animal is compelled to consume the Hamra in default of other green fodder. As to the cause itself of these accidents from the ingestion of Hamra by domestic animals, it is to be found in the existence in the tissues of the plant of a fluorescent substance, red in color, acting as a sensitizing agent to light, and which I have isolated during the year or more of my study of the question.

This pigment acts as a photodynamic agent, like fluoresceine and its derivatives, eosine, erythrosine (Bengal Red), etc., of which the physiological action is actually known, thanks to the researches of Tappeiner and Raab, Dreyer, Ledoux, Lebard, Joldbauer and Tappeiner, Straub, etc. The phototoxic effects of these substances are to be connected, as recently shown by Rhinke, with the phenomena of buckwheat poisoning (fagopyrism).

The analogy of these photodynamic actions with the symptoms produced by "Hamra" is evident. The fluorescent red pigment which I have isolated from macerations of *Hypericum Crispum* has enabled me to produce at will, in different animals (rabbits, sheep, the characteristic phenomena described above). On the other hand, the essential oil contained in the leaves in the small proportion of 0.2 per 1000 is not sufficient to cause them, and only a strong dose—producing the common phenomena of intoxication usually caused by the essential oil, nervousness followed by somnolence—caused death in the rabbit in 24 hours, the amount administered being ten times the quantity normally contained in the daily ration.

Summary.—The poisoning by Hamra of domestic animals exposed to light in Tunis is due to the presence in the tissues of the plant of a colored fluorescent substance which I have isolated, and consider as the phototoxic principle of *Hypericum Crispum*.—(*Recueil de Medecine Veterinaire*, 30 Jan., 1914).

Note.—In my bibliographic researches I have found reports on the action of *Hypericum Crispum* which are of earlier date than those to which I have alluded—dating, indeed to about the middle of the last century. Thus Verheyen (1), analysing a series of foreign publications relative to the influence of certain agents on animals of diverse colors, writes as follows:

“Cryillo, Marinosci de Martina et Menni di Lecce, confirm the popular opinion which attributes to the *Hypericum Crispum*—commonly called Fumula in Naples and Sicily—noxious, even fatal, properties to white-fleeced sheep feeding on it, while those of black wool suffer no inconvenience; and this is stated to be the reason why black sheep only are pastured on the plains in the vicinity of Tarento, where St. John's Wort is common.” Heusinger (2), in his researches in Comparative Pathology, reproduces these statements a little later.

It is strongly probable, moreover, that the curious photopathogenic action of St. John's Wort and buckwheat is not the sole cause of these phenomena, for the reason that other plants may produce analogous phenomena. Among the legumes which appear to possess this property we must mention certain vetches which have been accused of producing like conditions among horses (Steiner, Schrebe, Burmeister) and in cattle (Starkes, Erdt, Wilke) (3), the cases being characterized by swelling followed by gangrene of the non-pigmented skin; and it is probable that we must attribute to the same causes the cases reported by Le Mouroux (4) in black and white cattle.

Damman suggests the rôle of parasitic moulds on buckwheat. In 1907 Tappeiner showed that divers fluorescent substances, inoffensive in obscurity, become extremely toxic when exposed to sunlight (absorption of the ultra violet rays). Researches were then made in the matter, and divers observers (Busk, Ehmke,

Fischer) were able to establish that an alcoholic extract of the integument of the buckwheat seed and of the kernel is clearly fluorescent.

Fessler, moreover, thinks that the fluorescent material is identical with animal chlorophyll. With these data at our service we seem driven to admit that this material plays the part of a biological sensitizing agent, and the pathology of buckwheat poisoning may be stated as "a reaction to light of skin sensitized by the fluorescent matter contained in the plant," and we may understand that the symptoms may be slight or absent on those animals whose skin is pigmented. It is reasonable that this explanation may be applicable also to the toxic phenomena induced by St. John's Wort, as there is present in the flowering tops the seed capsules and the seeds, a substance blood-red in color (hypericine or hypericum red), which gives, according to Cerny, a fine fire-red fluorescence. These troubles quickly subside when this cause is removed (5).

REPORT BY M. RICHERT.

In October last (1913), M. G. Richert, M.V., forwarded to the laboratory of Professor Raulliet a sample of hay which he suspected of having caused a dermatitis of the forehead and lips of horses, causing at the same time an abnormal salivation. He requested a careful examination of the hay in order to determine whether it was composed in part of plants whose presence might explain the abnormal conditions. The sample proved to be meadow hay containing a considerable proportion of St. John's Wort (*Hypericum Perforatum*), and this was the only plant contained in the sample to which could be attributed the lesions observed. M. Richert was asked whether the lesions were found only on white horses or on portions of the skin deprived of pigment. Were they much exposed to sunlight? Did all the hay contain a similar proportion of St. John's Wort? The answers were:

The hay was fed to three horses:

1st. A black filly of 18 months, unbroken, and kept permanently in a dark stable. This animal was unaffected.

2d. An old gray mare (almost white with age), the head being lighter in color than the rest of the body and having some of the hairless nasal skin deprived of pigment. Only the whitest portions of this animal were attacked—the forehead and the bare, non-pigmented skin between the nostrils. The skin of the anal region (also deprived of pigment) showed similar lesions.

3d. A three-year-old gray gelding, son of the above. The forehead of this animal, the lightest part of the body, was the only portion affected.

These last animals (work-horses) were worked daily and their owner stated that the symptoms of pruritus were increased in proportion to the degree of sunlight to which they were exposed.

The hay was cut in the neighborhood from a hillside field, the soil being a heavy red earth. It was fed in full quantity for about three weeks before the commencement of the trouble, each animal receiving about thirty-six pounds daily. Unfortunately, as M. Richert was not called in at the beginning of the outbreak, he was unable to furnish a clear account of the lesions, they being obscured by rubbing and scratching. Of importance, however, is the fact that the symptoms quickly disappeared on ceasing to feed the hay.

“Facts of this character cannot be deemed absolutely rare, but up to the present they do not appear to have attracted much attention. However, analysis of certain prior observations shows clinical cases of like character.” Thus Paugoué (6) reported, in 1861, the occurrence of somewhat grave symptoms in two percheron mare colts which had eaten a considerable quantity of alfalfa containing about 50 per cent. of St. John's Wort.

The symptoms were large, full and slow pulse, respiration deep and infrequent, entire loss of appetite, debilitated appearance, head carried low, disquietude (the animal never being quiet), staggering gait, the senses of hearing and sight much enfeebled, pupils dilated and the conjunctivæ markedly injected—a deep red color—tendency to back and to assume dog-sitting position, the hind legs flexed and head lying on the ex-

tended forelegs. At other times they assumed the sternal decubital position, the head lying on the forelimbs or on the litter. Finally they became comatose. One of the mares showed a skin devoid of pigment on forehead and face and on the nose, and the skin of these regions was a wine-red color. Nothing is said of the other, but we may infer a similar lack of pigment from the fact that she had also the red discoloration of the nose.

According to the practice in his time, the patients were bled and subjected to a treatment with refrigerants, and the symptoms disappeared on the following day; but the first-mentioned animal underwent a second attack, the trouble disappearing in three weeks under similar treatment. The author does not hesitate to ascribe the symptoms to the consumption of *Hypericum Perfoliatum*. He does not, however, make it clear as to the conditions the animals were placed in when the trouble developed. Were they exposed to sunlight?

We must imagine from the rapidity with which the symptoms disappeared under treatment that they were kept stabled.—(*Recueil de Med. Vet.*, 1914).

Law, under *Erythema Caloricum* (7), writes of what is evidently a similar condition, recommending the protection of the afflicted white skin by shade or painting with lamp-black, and in treating of "*Fagopyrisinm*" (8), (*Buckwheat Erythema*; white skin disease), while noting the protection accorded to dark-skinned animals by their coat and pointing out the necessity of sunshine as a factor, has nothing to offer as an exciting cause.

C. Baillet (9), treating of *Hypericum Perforatum*, writes:

"Animals do not eat it voluntarily. At Toulouse we endeavored, in June, 1862, to feed this plant to sheep. They would not, however, eat it unless pressed by hunger, but we have not observed that it produced any evidences of disease. The observations were made on animals permanently stabled and thus confined in a place more or less dark.

"The common St. John's Wort is commonly believed to cause disagreeable eruptions on cows' udders and on the feet of white-haired animals. This species and the spotted St. John's Wort

(*Hypericum maculatum*) were brought into the department by Dr. G. W. Bready, from Norwood, Md., who stated that five horses were poisoned in May, 1898, by eating meadow hay which contained nearly 50 per cent. of these plants. One horse died from the effects of the poison and two were killed to prevent their further suffering (10).

"Trabut (11) states that in Tunis the *Hypericum crispum* L. causes a disease of sheep, 'Hamra.'

"Lewin (12), a German toxicologist, shows also that *Hypericum crispum* produced fatal poisoning when eaten by white-fleeced sheep, the symptoms being an acute dermatitis followed by convulsions.

"This species, like *Hypericum maculatum*, is not found in the French flora, being native to southern Europe and northern Africa."

This limits the direct data that I have been able to gather concerning the noxious properties of St. John's Wort; but it is most probable that diverse other observations, published by veterinarians regarding similar conditions, are to be referred to this family of plants. I would speak especially of accidents attributed to alfalfa, because we are familiar with the fact that St. John's Wort is often abundant in old fields of alfalfa. Such accidents have been reported by Kuhn, Bigoteau, Kovanyi and Marek in cattle and by Burmeister in the horse (13).

The symptoms in cattle resemble those set up by feeding potato refuse from starch factories, the eruption usually beginning on the hind fetlocks and sometimes on the internal face of the thighs, the mammary glands and scrotum, more rarely on the front legs, the breast and flanks. Besides the thickening and redness of the skin, a vesicular eruption discharging an abundance of serum is observed, forming crusts which crack when dry. Under these crusts a considerable amount of pus may accumulate. This condition gives rise to pain. It is true that similar still more concordant observations have been made regarding symptoms following the ingestion of clover, although St. John's Wort is somewhat rarely found mixed with it.

Cases in horses due to the consumption of Swedish clover, alsike (*Trifolium Hybridum*), have been reported by Damman, Haubner, Zipperlen, Michael, Heimann, Kleine, Friedberger and Frohner. Red clover (*Trifolium pratense*) is implicated by Kovats, and *Trifolium elegans* by Dessart. Cases in cattle due to clover pasture by Berndt and Nevermann, and from feeding red clover and cases in clover-fed sheep have been reported by Berndt and Nevermann.

Clover poisoning (*Trifoliose Kleekrankheit*) is characterized by inflammation of white skin of the head, limbs and occasionally of the buccal mucosa, with or without digestive or nervous troubles.

Upon the whole, these accidents may be assimilated to those which have for a long time been attributed to feeding on buckwheat, a condition known as fagopyrisme. We know that two principal hypotheses have been formulated regarding their pathology. Schindelka claims that buckwheat, under certain conditions of culture or under the influence of certain microbes, produces toxins in the digestive tract. These, absorbed and carried by the circulation, cause in the non-pigmented skin, under the influence of the chemical rays of the spectrum, a vasomotor disturbance and alteration of the vascular walls.

ON THE INFLUENCE OF LIGHT ON WHITE AND PIGMENTED SKINS IN THE TROPICS.

In the sun, the white skin is always slightly hotter than the brown, and with the brown skin the fall in temperature after a certain time of exposure is more pronounced. The heat absorbed by a brown skin is greater than the heat absorbed by a white skin in the same length of time; therefore, it would seem as if the rise in temperature should take place more quickly in colored than in white skin. This has been experimentally proven to be true with dead skin by P. Schmidt (14) and Eykmann (15). Yet just the reverse is true in living men. Brown skin will absorb a greater quantity of rays than white; but, being more quickly heated, the point where sweat secretion begins is reached

earlier, and as soon as this point is reached the skin is cooled by water evaporation. With the white skin this process takes place more slowly, and it must be for this reason that the brown skin, while absorbing more heat, is found to have lower temperature than the white skin under similar conditions. The regulatory apparatus of the brown is more sensitive and works more promptly and successfully. This statement deserves attention because the experiments on dead skin only served to convey a wrong impression of the behavior of colored and white skin when exposed to the sun's rays (15).

Swart (16) calls attention to the fact that plants in the sunlight of the tropics seek to protect themselves by the production of a red color (erythrophyll) (17), the absorption spectrum of which has a band in the violet. In a journey to Java he observed that the red color of the leaves was more common and marked in the low, tropical valleys than higher up on the mountains. In the cloud-covered belt it was entirely absent, but above the latter it again appeared (18).

By means of erythrosin ($\text{Erythrosine} = \text{C}_{20}\text{H}_6\text{O}_5\text{I}_4\text{Na}_2$, Bengal Red $= \text{C}_{20}\text{H}_4\text{Cl}_2\text{I}_4\text{O}_5\text{K}_2$), Hertel was able so to stain the cells of living organisms that their power of absorption for waves of greater length than 280 mm. was markedly increased. The introduction of this experimental modification enabled Hertel to demonstrate that even the visible light rays could bring about destruction of tissue in the same time as the ultra-violet.

The physiological action of light rays is, therefore, not dependent upon any specific region of the sun's spectrum, the wave length is only of importance in such degree as the total energy, and the power of absorption is determined thereby. A plant, for instance, for the existence of which light is absolutely necessary takes on a color which is complimentary to the incident rays. For example: *Oscillaria sancta* colors red in green light and green in red. Light also has an unfavorable effect on the phenomenon of cell division, but this only takes place with higher intensities. Different pigment cells have a different absorptive power for incident light, according to its wave length, but the ultra-violet are

equally absorbed by all; therefore, the latter differ markedly from visible light, in which the absorption maxima, according to the color, lie at diverse and far-removed parts of the spectrum.

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15. Virchow's Arch., 1895, 140, 125-157.
15. The Philippine Journal of Science, B. Medical Sciences, 5, (1911, p. 125.)
16. The Philippine Journal of Science, B. Medical Sciences, 5, p. 125.
16. Jour. Linn. Soc. (Bot.), 1895, 31, 364; Ann. Bot. 1897, 11, 440.
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THE ARMY MULE INDISPENSABLE—The following extract from the *National Tribune*, Washington, D. C., of October 15, clearly demonstrates the impracticability of the automobile as compared with the horse or mule in actual service on the battlefield, where set routes over good roads cannot always be chosen. "The automobile has not put the serviceable Missouri army mule out of commission by any means. A detail of French officers are at St. Louis proposing to spend \$12,000,000 for cavalry horses and mules. The motor car is an admirable thing for good roads and can beat the mule all to pieces on the asphalt or macadam, but a motor cannot jump a ditch nor pull itself out of a mud hole, nor can it be turned into the nearest pasture field nor make its breakfast off of cottonwood poles."

IS LOST WITHOUT THE REVIEW.—Dr. Grover C. Love, of Indiana, says: Enclosed find check for the REVIEW—I am lost without it"

SURGICAL ANAESTHESIA.*

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A modern surgical operation requires several things for its successful completion. The results of surgical manipulations depends firstly, upon the skill of the surgeon; secondly, upon the proper control and restraint of the animal; and thirdly, upon the proper treatment and handling of the patient after the operation is completed. It is becoming more apparent as our knowledge of surgery, anatomy, pathology and physiology is increased, that in order to obtain results following surgical operations they must be done under the most favorable conditions. It is impossible to do skillful work unless the patient be properly prepared, properly restrained and properly anaesthetized. Acrobatic surgery is no longer a safe proposition, as all surgeons are not acrobats, nor are all acrobats surgeons. Therefore, in our opinion it is quite essential for satisfactory surgical work to have the patient restrained and properly anaesthetized.

General anaesthesia means a complete loss of sensation, and is produced by the use of drugs acting upon the central nervous system. In veterinary practice we employ two classes of drugs to produce general anaesthesia, namely:

Volatile substances such as chloroform, ether, etc., and non-volatile or fixed substances such as chloral hydrate, cannabis, morphine, etc. Anaesthesia, or narcosis is the result of a special action exerted directly on nerve centers by the agent used, therefore it is necessary to insure a sufficient quantity of the anaesthetic to arrive at those centers. Volatile substances, introduced in a state of vapor into the respiratory tract, are freely absorbed by the blood circulating in the lungs, which blood, passing to the left heart and general arterial system, rapidly produces

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anaesthesia. On the other hand, non-volatile or fixed anaesthetics when administered by the various channels, such as from mucous membranes, the jugular vein, subcutaneously, or intraperitoneally must pass through the general circulation direct to the nerve centers, producing in the majority of cases almost direct sedative action without any appreciable degree of stimulation.

When anaesthetics are administered *via* the respiratory tract, *i. e.*, the volatile substances, they produce a series of phenomena which are rather constant and characteristic.

1. Period of excitement.
2. Period of anaesthesia, (surgical period).
3. Period of intoxication or collapse.

1. The period of excitement is due in the first place to the action of the anaesthetic vapor on the nerve terminations in the mucous membrane of the upper respiratory passages, and to the paralyzing action upon the cerebral inhibitory centers, and in the second place due to the action of these vapors on the central nerve centers themselves. This period is very pronounced and is characterized by hyperaesthesia of the sense organs, excitement, violent struggling, acceleration of the respiration and circulation, mucous membranes injected and dilated pupils. These symptoms gradually recede, the heart's action becomes slower, respiration becomes easier, more regular and more deep. The pupils gradually contract, excitement grows less and the animal passes into a deep sleep.

It has been our experience that this is a rather critical stage in anaesthesia and must be watched carefully. Animals with respiratory or circulatory complications may have respiratory or cardiac syncope, or asphyxia from spasm of the glottis. We have observed these complications in several cases out of several hundred anaesthetized.

The second period of anaesthesia is characterized by complete suspension of activity in the nerve centers, *i. e.*, the cerebral lobes and mesocephalon, reduction in the activity of the centers in the medulla oblongata. The animal is plunged into deep anaes-

thetia. The excito-motor centers are paralyzed, the muscles relax, the limbs lie inert, the respiration is slow, and the movements of the chest wall are diminished, and abdominal movement more pronounced. The heart's action becomes more rapid on account of paralysis of the moderator center, but the pulse should remain full. Vision is no longer coordinated. While the pupils remain contracted and immobile, reflexes cease in the various regions.

We have frequently observed in our experience that sensation does not disappear at the same time in all tissues, being last retained by the organs under spinal control. It sometimes happens that when anaesthesia appears complete that struggling often results immediately the knife touches the diseased region. Inflamed parts retain their sensibility much longer than healthy tissue.

This is the period in anaesthesia in which all surgical work should be done. Mistake is often made by veterinarians in starting to operate too soon. This means that in operating before this period is reached the animal is in a state of hyperaesthesia and therefore more excitable than if no anaesthetic had been given. We have frequently kept the animal under anaesthesia for a couple of hours. This is necessary under some conditions.

The third period of anaesthesia, intoxication or collapse, is the stage that we all want to avoid. This is characterized by either a sudden or progressive diminution of respiration and circulation and a sudden dilation of the pupil. The respiratory movements become irregular and shallow, the pulse small, rapid and irregular. Finally the vital centers in the medulla become paralyzed, the respiration ceases, pulse imperceptible and the animal dies from respiratory syncope. These symptoms so described, vary according to the kind of anaesthetic employed. With the volatile anaesthetics (chloroform, ether, etc.) the first period of excitement is more marked than in the non-volatile anaesthetics, where there is scarcely any symptoms of excitement present except in certain individuals after morphine or cannabis has been given.

Now let us consider briefly anaesthesia in the different animals, the kind of anaesthetic employed and the general technique of its administration. From a practical standpoint it is necessary for us to consider those that show the greatest efficiency, and the least degree of danger, and also those that are the easiest of administration.

ANAESTHESIA IN THE HORSE.

I think we are all agreed that of all the volatile anaesthetics, chloroform will come nearer fulfilling our requirements than any of the others. Anaesthesia can be produced in horses by chloroform without any great degree of danger, provided certain precautions are observed. We have employed chloroform rather extensively for horses and have had excellent results. A few cases required prompt treatment, such as heart and respiratory stimulants, tracheotomy, etc. Out of several hundred cases during the past 5 or 6 years we have lost none due directly to the chloroform. Methods of administering chloroform. There are two general methods we employ, and think it best to describe them separately.

The first method:

A rather thorough examination is made to determine the heart's action, also whether there might be some impediment to the respiration. This we consider a very important thing and if observed will often prevent serious complications and disagreeable after-treatment. We have made it a general rule that in all cases where there are any indications of heart or respiratory weakness to give $\frac{1}{2}$ -1 grs. of atropine one hour before administering the anaesthetic. This treatment will overcome to a great extent the depressant action of the chloroform on these vital organs. Lately in conjunction with this atropine treatment we have been administering with it a minimum dose of morphine to relieve some of the excitant symptoms, so far this has proven so satisfactory that I think we will continue this practice.

The quality of the chloroform should be carefully looked after. Use nothing but the best (Squibbs). It is the cheapest

and most satisfactory in the end, being less depressing to the respiratory and circulatory centers.

Various methods have been devised for administering the chloroform. We prefer using simply a towel wrapped around the nostril and at each inspiration the chloroform is dropped on the towel and is quickly taken in with the air. We have used also a regular chloroform inhaler, but this method, to be described, has not been found so satisfactory.

Some advise strongly for withholding food for 6-12 hours previous to anaesthesia, but we have not found it so very essential in the average cases. In very fat, plethoric animals it would be advisable, or in cases where it can be done conveniently. However, we do not think this such a vital matter as some of the others.

Procedure:

After considering all of these things previously mentioned, and having all of the material ready, the animal is cast or laid on the table. All of the unnecessary straps and ropes should be removed so as to allow free respiration. Use a large halter so that the throat can be kept free. Keep the head well extended and level, *i. e.*, do not elevate the nose. The lower nostril is plugged with gauze, the upper nostril coated with vaseline. The towel is wrapped firmly around the nose up to the halter band. The chloroform then is gradually dropped on the towel at the inspiratory movements. It is administered until anaesthesia is established. It will take usually 15-30 minutes to produce complete anaesthesia. We have always favored rather slow administration of the chloroform for the reason that the stages of anaesthesia are more easily controlled. It also requires less chloroform when administered slowly.

Complete anaesthesia is characterized by the disappearance of the oculopalpebral reflex and contraction of the pupil. At this stage should the corneal membrane be touched no movement of the eyelids takes place. At this stage remove the chloroform and as soon as the corneal reflex becomes apparent more can be given.

The anaesthetist should always observe the following:

- (a) Watch the corneal reflex.
- (b) Watch the pupil of the eye.
- (c) Watch carefully the respiration.
- (d) Watch the pulse.

As soon as the operation is completed and the hopples and towel removed, allow the animal to lie quietly for a few minutes, when it will arise without much difficulty.

Fatal symptoms occasionally develop and should very promptly be attended to. The greatest dangers are from asphyxia and syncope. Asphyxia usually occurs either at the excitement stage when the chloroform is administered too rapidly, or at the end of the anaesthetic stage when anaesthesia is pushed too far.

In syncope, which is indicated by irregularity of the pulse, dilated pupils, weak heart's action, the head should be lowered as far as possible, artificial respiration commenced, and cold water dashed on the head. Subcutaneous injections of strychnine or nitroglycerine may be given.

In spasm of the glottis, which is characterized by loud snoring sound, very labored respiration and cyanotic membranes, perform tracheotomy at once. This will relieve the difficulty.

We are sure that this method can be used successfully without any great amount of danger.

Second method:

During the past few years there has been a tendency among some veterinarians to administer chloroform to animals in the standing position. This in some respects would be an ideal method, and I can see no reason why it cannot be employed more extensively than what it is at the present time.

The procedure is as follows:

We have used this method in a few cases and it has been quite satisfactory. A nose bag or inhaler is essential. It should be adjusted to fit rather snugly over the nose, and should have a removable bottom so that the chloroform could be placed in the

inhaler after everything is ready. Owing to the excitable stage of the chloroform the animal should be placed in a roomy box stall well bedded with straw or the patient may be taken outside. Strap up one front foot and have the head secured by assistants or by rope through ring in wall. The chloroform (using about 2 oz. on cotton) is placed in the inhaler. Symptoms of excitement are of short duration, the animal gradually becomes weaker, the muscles relax when he will go down and the operation can proceed without hobbles. We consider this method a little more dangerous from two standpoints: 1st, danger of the animal becoming injured during the excitable stage; 2d, more danger of asphyxia or syncope from the rapid anaesthesia. The same preparation before hand and the same precautions should be observed as in the other method.

We do not believe that ether is as satisfactory for anaesthetic purposes in horses as chloroform, so will not consider it now. A great deal has been written and said about chloral hydrate as an anaesthetic for horses. It has been our good fortune to try out this drug thoroughly and can say that it is not a safe anaesthetic when administered intravenously. There is entirely too much danger of phlebitis at the point of injection. We have had some bad results following its use, although was extremely careful in its administration.

However, it is being used quite successfully for partial anaesthesia as a rectal injection made up in the form of an emulsion with glycerine and acacia 1-4. Use 1-3 ounces, varying dose with size of animal.

General anaesthesia may be produced in horses by using chloral as an intraperitoneal injection. Technique is as follows: A large syringe with a generous sized needle is sterilized, the hair should be removed from a small area on the lateral side of the abdomen, the skin thoroughly washed and disinfected by painting surface with tincture of iodine. The solution made by dissolving $\frac{1}{2}$ -1 oz. of chloral hydrate in double the amount of diluted glycerine or 10 per cent. saline solution. The needle is then inserted in an inward and downward direction. The

needle is moved about to be sure that it has not entered the bowel. The solution is then injected. Anaesthesia takes place in 15-35 minutes. In cases where there is danger of too profound anaesthesia strychnine or pilocarpine should be given.

Cannabis indica, owing to its ease of administration, and rather satisfactory results, is now being used extensively to produce partial and complete anaesthesia. During the past three years we have used *cannabis indica* rather extensively, especially where we desired only a partial anaesthesia.

Procedure as follows:

Careful disinfection of the skin over the jugular region, needle and syringe should be sterilized, 4-7 c.c. of the fluid extract is then injected. Partial or complete anaesthesia is established in 20-40 minutes. We have observed no marked unfavorable symptoms except in a few cases where excitant symptoms were noticed due to individual susceptibility. In such cases chloroform administered in small amounts produced a very satisfactory anaesthesia. This anaesthetic has much to recommend it to the veterinarian. Morphine must be considered an unsatisfactory anaesthetic by itself owing to its inconstant action.

ANAESTHESIA IN RUMINANTS.

General anaesthesia is seldom resorted to in ruminants except in obstetrical manipulations, and in some major surgical operations. Chloral hydrate administered *via* mouth well diluted in doses of 1½-2 oz. has proven very satisfactory, narcosis lasting for 1-2 hours. No bad results have followed its use. Chloroform is also used in cattle, employing the same methods and precautions as in the horse. The action of chloroform is slower and requires more in the ox than in the horse. We have found that in cases of dystokia in cattle anaesthesia is very important to relieve the severe straining and to relax the tissues.

ANAESTHESIA IN SWINE.

Swine are very susceptible to chloral hydrate, which makes an ideal anaesthetic when once the dose is regulated properly.

We have employed chloral hydrate rather extensively for ovariectomies, hysterectomies, etc., and have only praise for its action. Anaesthesia is established in the following manner:

The rectum is emptied of its contents by injecting a few ounces of warm water and allowing it to discharge. The chloral emulsion 1-4 in acacia and glycerine is used and 1-1½ drams per 50 lbs. in weight is injected as high as possible with a long-nozzled syringe. Anaesthesia is complete in 15-30 minutes and will last for 1-2 hours. Should the anaesthesia become too profound, a small dose of strychnine should be administered with inhalations of ammonia.

Chloroform is also a very satisfactory anaesthetic, and is administered as described in the other animals.

ANAESTHESIA IN THE DOG.

During the past 15 years we have anaesthetized approximately 5-6,000 dogs of all ages and sizes. Morphine has been used almost exclusively for these animals with very excellent results. Dogs are very susceptible to the narcotic influence of morphine, and profound anaesthesia is very promptly and accurately produced.

Methods of Administration:

From ¼-3 grains of morphine are used, depending upon the age and size of the animal. This is dissolved in sterile water and injected subcutaneously with a sterile hypodermic syringe. In the course of a few minutes it induces some vomiting owing to the morphine being deposited out on the mucous membrane of the stomach. This is quickly followed by a progressive narcosis ending in a profound anaesthesia in the course of 15-30 minutes. Apparently large doses can be given without any great danger. We consider it especially valuable for these animals on account of its ease of administration, its safety, its constant action, and a rather long period of anaesthesia which is important in keeping the animal quiet following surgical operations. There is no apparent bad after-effects. Occasionally you will find an indi-

vidual animal that will not readily go under its influence, instead show excitement, yelping, increased respirations, etc. These are the very rare exceptions, and should they occur use a small amount of chloroform to finish the anaesthesia. Be careful and do not push the chloroform too far as there is danger of asphyxia or syncope.

In case the anaesthesia should become too profound following an operation, small doses of strychnine ($1/60$ - $1/30$ grain) are indicated and inhalations of ammonia given to stimulate the respirations.

H. M. C. compound has been used rather extensively, but personally have not been able to get as satisfactory results as some have claimed for it. We have used it in conjunction with small amounts of chloroform with very satisfactory results. However, others have used it very successfully and it should be considered one of the good anaesthetics for this animal.

Chloroform is used also for a general anaesthetic in dogs, but it has not proven to be as safe or convenient as either morphine or H. M. C. compound.

Ether has been employed to a large extent and has proven to be a very satisfactory anaesthetic for the dog. A good way to administer it is to saturate cotton or gauze with a couple of drams of the ether, place it in a small conical vessel, and having the animal restrained place the cone over the nose and in a few minutes complete anaesthesia will be established. Very little danger follows providing the anaesthesia is not pushed too far. In some cases where rapid recovery is desirable it is the most satisfactory anaesthetic as recovery will be complete in the course of an hour or so.

In cases threatening syncope or asphyxia, artificial respiration should be used and kept up for at least 30 minutes. Ammonia stimulants should be administered. Followed later by $1/60$ grain of strychnine.

It is always considered safer when chloroform or ether are used in the dog as a general anaesthetic to administer $1/10$ grain of atropine about 30 minutes before beginning the general anaesthesia, to sustain the respiratory and circulatory centers.

ANAESTHESIA IN THE CAT.

After a long series of cases in this particular animal we do not hesitate in saying that ether is by far the most reliable, and least dangerous of all the anaesthetics. The cat being a highly sensitive animal, and very susceptible to all drugs acting on the central nervous system, we have found it highly important to induce anaesthesia as rapidly as possible, and also to have the anaesthesia disappear as early as possible, after the operation. In considering these particular points ether will bring about these results much more satisfactorily than any of the others we have used. Consequently we consider ether a perfectly safe and almost ideal anaesthetic for the cat.

Procedure as follows:

The animal is restrained on the table or by some other practical means, and $\frac{1}{2}$ -1 dram of ether placed on gauze or cotton and inserted at the bottom of a conical graduate (say 60-120 c.c. graduate), this is then placed over the nose. Some struggling ensues for a few moments, but anaesthesia is rapidly established and is very profound in the course of 5-10 minutes. As soon as anaesthesia is established the ether should be taken away and further administered as the occasion might require. It is perfectly safe to keep them under the influence of ether for 1-2 hours, providing care is used in its administration. Danger of asphyxia or syncope only occurs in case the anaesthesia is pushed too far, or some complication of the respiratory or circulatory system is present. In case danger of asphyxia threatens, the ether should be removed at once, plenty of fresh air allowed, and artificial respiration begun at once. Artificial respiration should be persisted in for at least 20 to 25 minutes. We have seen a few cases where success crowned our efforts in resuscitation after 15 to 20 minutes application of artificial respiration. Further, ammonia should be administered by inhalation. The use of chloroform has not proven so satisfactory on account of its medullary depressant action. However, it is being used by some veterinarians with very excellent results.

Morphine for these animals is not satisfactory owing to its inconstant action and the danger of excitant symptoms being prolonged. We have observed some remarkable excitant symptoms following morphine injection in cats.

ANAESTHESIA IN BIRDS.

This is best accomplished by placing the bird under a bell jar or covering the cage with some impervious cloth, and saturating some cotton with small amount of chloroform which is put in the cage. In a few moments anaesthesia will be produced. As soon as anaesthesia is established the chloroform should be removed; later, more can be administered if necessary. Birds can be successfully anaesthetized by this method without much danger.

In conclusion will say that, general anaesthesia is a practical and safe proposition for the practitioner, by far less dangerous in the long run than to try and operate without its use.

It is a humane method.

It adds to the surgeon's skill by properly restraining the animal.

It will increase the surgeon's efficiency.

Results of operations will be more satisfactory and by its use the owner will see the advantage of such treatment and the veterinarian's prestige will be increased.

Would recommend the following general anaesthetics.

1. For horses:

- (a) chloroform 1-10 oz.
- (b) cannabis (Fld. Ext.) 4-7c.c.

2. For the ox:

- (a) chloral hydrate (per os) $1\frac{1}{2}$ - $2\frac{1}{2}$ oz.
- (b) chloroform 5-12 oz.

3. For dogs:

- (a) morphine (sub-cut) $\frac{1}{4}$ -3 grains.
- (b) ether.
- (c) H. M. C.
- (d) chloroform,

4. For cats :
 - (a) ether.
5. For birds :
 - (a) chloroform.
6. For pigs :
 - (a) chloral hydrate.

It is our desire to see general anaesthesia more generally employed by the practitioner of veterinary medicine, and there is no reason why it should not be employed to the same degree as in human surgery.

SANITARY WATERING PLACES FOR HORSES AND THE CONTROL OF GLANDERS IN MISSOURI is the title of Monthly Bulletin No. 9 (*Handy and Practical Farm Library*, published by the Missouri State Board of Agriculture), by D. F. Luckey, State Veterinarian of Missouri. This circular goes carefully into every phase of the control of glanders, and as the heading suggests, its author fully appreciates the part public watering troughs play in the dissemination of this disease. Dr. Luckey acknowledges the great assistance rendered by the co-operation of veterinarians engaged in general practice. The circular says: "The sanitary hydrant now in use in Kansas City was devised by the members of the local Kansas City Veterinary Association and the Team Owners' Association. The bills for building models and drawing plans were paid by these associations, and principally by the farmer. The hydrant was not patented. On the other hand, the Veterinary Association offers to furnish free blue prints for building it. These may be obtained by writing Dr. Atvill Byrd, 2406 East 9th street, Kansas City, Mo. This hydrant was adopted as official by the National Team Owners' Association at its convention in Minneapolis, July 7-9, 1913."

CERTAINLY THERE WITH THE GOODS.—Dr. T. G. Fultz, Pella, Iowa, in renewing his subscription to the REVIEW, says: "It was certainly there with the goods the last year. Success to you in your endeavors to supply us with such a periodical."

SKIN DISEASES OF THE DOG.*

H. J. MILKS, D.V.M., ITHACA, N. Y.

Skin diseases may be roughly divided into two groups, parasitic and non-parasitic. The first group may be further divided into those caused by animal parasites and those caused by vegetable parasites. Taking up the non-parasitic diseases first we find eczema the most frequent and indeed the most common of the skin diseases of dogs.

Eczema is a non-contagious inflammation of the skin characterized by any or all the results of inflammation, either at once or in succession, as erythema, papules, vesicles or pustules. It is accompanied by infiltration and itching to a greater or lesser degree, and terminates in a serous discharge with the formation of crusts or by desquamation. It is classified in various ways, acute and chronic, moist and dry, according to its manifestations, as erythematous, papular, vesicular, etc., or according to its location and extent.

Causes:—Eczema is usually the result of some external influence upon the skin; such as irritants, rubbing, pressure from collars or muzzles, parasites as fleas and lice, and dirt accumulating in those places which the animal cannot keep clean. This factor accounts for the frequent occurrence of the disease upon the back. Strongly alkaline soaps and too frequent bathing are often causes because they not only soften the skin, but also serve as irritants. Lastly the character of the food has some influence as is shown by the restriction of the diet in pampered dogs and those fed upon highly spiced food.

Symptoms:—The symptoms are so well known that it is scarcely worth while to repeat them. They include all the phenomena mentioned previously, and since they are but different

*Read at the meeting of the Central New York Veterinary Medical Society, Syracuse, June, 1914.

stages of the same disease we may see them all upon the same animal, and frequently these are so changed by the irritation of the animal that it is difficult to discover any of them. As a rule certain parts of the body appear more predisposed to the disease, as upon the ridge of the back where the affection may start at the root of the tail or neck and extend in all directions, or on the outer side of the extremities and rump. It is not so frequently seen upon the tender thin skinned parts, as the lower abdomen, chest, inside of thighs, etc., but these locations are not in any way immune to it. The disease may pass through all the succeeding stages or heal in any one of them. Healing may take place promptly or the disease may last for weeks and months or even be incurable.

Diagnosis:—It must be particularly diagnosed from the different forms of mange and ringworm. The differential diagnosis will be further discussed under the head of mange.

Treatment:—The treatment of eczema varies greatly, but some principles should be observed. First of all there is no specific. What will work well in one case may be worse than useless in another. The indications are to remove the cause, endeavor to check the inflammation and to maintain the general health. The diet of pampered dogs should be restricted and the excretions regulated. If the bowels are constipated, they should be loosened with a mild purgative, if the urine is scanty, an alkaline diuretic might be of service. Arsenic is claimed valuable by some, but is contradicted by others except in cases of debility.

Local treatment is the one that we must look to for most service. It involves one principle particularly, namely, that nothing irritant should be applied upon acute eczema, while the chronic needs some stimulation as from the use of tar. Soap and water should be avoided as much as possible in the acute variety. Solutions of boric acid, or water containing bran, oatmeal, or starch may be substituted for cleansing purposes, while in the chronic variety, soap may be of decided benefit as a stimulant. The crusts and scabs which are always present should be removed to get the best results from the treatment. This can be done by the

use of oily preparations, starch poultices or some of the agents mentioned above. Pastes and ointments should be removed by softening with oil and not by the use of soap.

Acute Variety:—Protect the parts from water, soap and air, remove the scabs as mentioned above; for erythema use dusting powders, talcum, lycopodium, boric acid, Zinc oxide, etc., as in the following:

Pulveris Camphorae	1 dr.
Zinc Oxide	2 dr.
Amyli	1 dr.

M. Ft. Pulveris,

Lotions which leave a sediment after evaporation are also valuable, such as black wash or the following:

Resorcini	ss. dr.
Bismuthi Subnitratis	2 dr.
Glycerini	2 dr.
Liquoris calcis q.s. ad.....	5 oz.

M. Ft. Lotio.

Or if ointments are preferred the following may be useful:

Unguentum Ammoniati Hydrargyri, calamine ointment, salicylic acid in oil, 2 to 5 per cent., zinc oxide ointment or a paste as:

Zinci Oxidi	10
Petrolati	2
Amyli	28

M. Ft. Unna's zinc paste.

Thymol or phenol may be added if the itching is severe.

In the weeping or moist variety where the discharge is excessive, astringents must be used. These may include lead plaster, tannic acid or silver nitrate in 5 per cent. solution. We often get very gratifying results from the use of a 5 per cent. solution each of tannic and salicylic acid in alcohol. After the discharge has ceased, the treatment should be changed to unirritating ointments or lotions.

Chronic:—Here the scabs and crusts should be removed with soap and water and some stimulation employed. It is in this variety of the disease that preparations containing tar, creolin, etc., are valuable. It should be always kept in mind that the more chronic the eczema, the more benefit will be received from applications of tar, creolin, cade, etc., also, that some animals are unable to stand the treatment with tar, and consequently the condition is made worse instead of benefitted. The treatment also varies somewhat as to the character of the eczema, i. e., whether it is moist or dry, etc. When moist the same preparations are to be used as mentioned for that condition in the acute variety, and when dry the coal tar preparations, tar, etc., oil of cade, is equally valuable with oil of tar, but has the advantage of a more pleasant odor.

Olei Cadini	1 dr.
Acidi Salicylici	10 gr.
Zinci Oxidi	2 dr.
Amyli	2 dr.
Petrolati	4 dr.

M. Ft. Ung.

Sig. Apply twice daily.

Vienna Tar Liniment.

Picis Liquidæ	
Sulphuris Praec. aa.....	3 oz.
Saponis Mollis	
Alcoholis aa.....	4 oz.

or

Picis Liquidæ	
Saponis Mollis.....	2
Alcoholis Dilutus.....	1

MANGE

Mange or scabies is probably the next most common skin disease of the dog. It may be defined as a specific contagious skin

disease caused by the mange mites, manifested by more or less severe itching and violent eczematous inflammation of the skin.

There are two varieties of mange in the dog, named after the specific mite which causes them, the sarcoptic or principle mange, and the symbiotic. To these for ease of discussion the follicular may be added, although it is not usually classed as a true mange.

The sarcoptic mites burrow under the upper skin and feed upon the young cells of the rete malpighi. They also propagate in these burrows and cause intense itching. This is the most common parasitic skin disease of dogs. It most often attacks the ridge of the nose, base of the ears and eyebrows but may start in other regions as, upon the lower abdomen, chest, elbows, or in fact anywhere. It spreads very rapidly so that the entire surface of the body may become affected within a month, but its aspect varies somewhat with the resistance of the host. The symptoms simulate those of eczema, starting with small red spots, visible only upon the unpigmented parts of the body. These spots may be succeeded by papules vesicles or even pustules which may burst and leave large discharging areas. The vesicles and pustules soon dry up under grayish yellow crusts, while the skin scales, the hair falls out and bald spots appear. The skin finally thickens, becomes wrinkled, and often cracked and fissured by the rubbing of the animal. Not all cases, however, follow the above lines. Some may exhibit only the dry stage, which is shown by desquamation of the epidermis. The changes produced in the skin are always accompanied by intense itching which increases with warmth or exercise. This keeps the animal in a continual state of unrest and if treatment does not relieve, it may die of cachexia.

Diagnosis:—The diagnosis must be differentiated from eczema and follicular mange with which it is most likely to be confused. Besides the general symptoms of each, we have in the sarcoptic, violent itching, especially at night, commencement of the disease upon the head, ease of transmission to other dogs, wrinkled appearance of the skin and baldness, accumulations of scabs and dirt, and preference of the disease for the tender parts of the skin, and localization.

In eczema the disease spreads more rapidly, the itching is often severe at all times; there is no localization, and a preference for other parts than just mentioned. Furthermore, eczema usually responds readily to treatment, a factor which is diagnostic. It may be confused with the squamous form of follicular mange from which it is differentiated by lack of itching in the latter. A positive diagnosis always depends upon finding the parasite in scrapings from the diseased parts, but this is not always easy, so that any skin disease, if apparently contagious, accompanied with intense itching and other symptoms mentioned above, may be regarded as mange, even though no parasites can be found.

Prognosis and treatment:—The prognosis is fairly favorable, although a cure is not always easy, and many dogs are unable to stand the treatment. Generally it is necessary to apply the treatment to the entire body after first clipping the hair. Usually one-fourth of the body is treated daily and after the entire body has become covered, a bath is given. The scabs must be removed with soap and then washed with water, but care should be taken not to apply toxic drugs directly to the raw surfaces on account of the danger from absorption. The usual parasitocides are creolin, tar, sulphur, oil of cade, crude oil and balsam of Peru, as

Creolini

Saponis Mollis aa.....50

Alcoholis $\frac{1}{2}$ —10

M. Ft. Sol.

Sig. Rub in daily on one-third of the body. A cure is said to result in from two to three weeks, or the tar and similar preparations used in chronic eczema may be used. Peruvian Balsam is good, but is expensive. It is usually diluted with alcohol.

Symbiotic mange or dermatophagus is found exclusively in the external ear passages, and is associated with otitis interna. These mites cause little or no inflammation. The otitis is a secondary affection due to soiling and injuries from shaking the head. The symptoms are the same as those for canker. It responds readily to treatment for that disease.

FOLLICULAR MANGE.

Follicular mange is a contagious disease due to the presence of the acarus mite, *acarus folliculorum*, which inhabits the hair follicles and sebaceous glands. It is characterized by slight itching, falling out of the hair with a simultaneous desquamation; or by pustule formation with subsequent thickening of the skin.

These mites live and propagate in the hair follicles and sebaceous glands, and have been found in the comedones of man, but do not seem to cause any irritation there. It differs in shape from the other mites mentioned.

Follicular mange attacks dogs of all breeds, but the short haired ones more often than the long haired varieties. This is thought to be due to the fact that the long hair wards off infection. It is very contagious, but yet is not easily transmitted by inoculation. This disease appears in two forms, the squamous and the pustular. In the former its favorite seat is around the eyes where it is shown by loss of hair, slight irritation and desquamation of the epidermis and the skin may finally assume a bluish gray color. On account of the slight reaction, diagnosis of this variety of the disease is difficult so that all cases showing baldness around the eyes, accompanied with slight irritation should be examined for the parasite.

The second or pustular variety is more common. It is shown by the formation of papules or pustules which correspond to the location of the glands. It may occur in circumscribed patches upon the head or paws, or may attack the entire body. The usual places, however, are the head, throat, neck and inner sides of the limbs. In the early part of the infection the skin is hyperemic, with some scattered nodules. These change in color to bluish red or even suppurate. The skin thickens and may be partially covered with a greenish, yellow, sticky, purulent discharge, in places mixed with blood. The hair falls out or can be easily extracted. If the skin is not injured by the animal scratching, it will dry up, but still be thickened, and has a tendency to lie in folds and show bald or partially bald spots. It is covered with bluish gray epidermal cells and scabs between the cracks or

fissures, and has a peculiar copper red color in the unpigmented parts.

The surface may be covered with lumpy hard nodular excrescences from which plugs of pus may be squeezed. Itching is usually slight, but may be severe. If the animal scratches itself the above lesions are much changed.

Diagnosis.—The pustular variety may be often diagnosed by the characteristic bluish red pustules, localization of the affection upon the head, and extremities, while the squamous form can only be positively diagnosed with the microscope.

Prognosis and treatment.—The prognosis is not very favorable as treatment is difficult and may take months to effect a cure. A great many drugs have been advanced for the cure of this disease which only tends to show the difficulty in treatment. The usual remedies are the same as those mentioned under the sarcoptic variety, tar, creolin, etc., to which sulphuretted potash, tincture of iodine, aspidium and the mercurial preparations should be added.

The principles of treatment consist in first clipping the animal and squeezing or splitting the pustules, followed by the application of the parasitocides. I will not enter further into the treatment except to say that we have had good results in the localized squamous variety from the applications of tincture of iodine and in generalized cases by the use of baths and the following prescription:

Balsami Peruviana	50
Creolini	50
Oleoresinae Aspidii	75
Alcoholis	550

The treatment must be continued until no nodules are present, and even then the danger of reappearance is great. It is needless to say that all cases of mange should be kept in quarantine.

SARCOPTIC SCABIES OF THE HORSE.*

BY COLONEL E. R. C. BUTLER, A.V.S., F.R.C.V.S.

I make no attempt to give a detailed general survey of the disease, but confine my report to some clinical points.

(I) SYMPTOMS.

The severity of the symptoms is in inverse proportion to the general well-being of the animal.

In a well-fed, well-groomed, and well-conditioned horse they may be comparatively trivial. It may not be till the disease has existed for many months that it is thought necessary to consult the veterinary surgeon. The patient will have a slight eruption, will enjoy grooming, will lean on the brush, and will show gratification by the movements of his lips; but these may not be recognized as signs of a disease. The eruption may be lightly spoken of as "humor," the pleasure shown when brushed is considered a normal habit, and the more attention that is paid to grooming and the general toilet of the stable the more slowly will the disease spread, and the slighter will be the symptoms displayed. Some such cases appear to acquire a tolerance of the irritation and to harbor the parasite without great inconvenience to themselves, whilst they remain a potential source of infection to others.

On the other hand, when the opposite conditions prevail, when overwork and underfeeding combine to impoverish the tissues and lower the vitality of the patient, the symptoms become more pronounced; and if in addition the animal is ungroomed and the spread of the parasite completely unhampered, they are extremely severe. The irritation is very marked; the constant rubbing and biting which is practised to allay it produce excoriations and inflammation of the skin, which becomes thickened and wrinkled.

* Reprinted, Tenth International Veterinary Congress, London, 1914.

on the neck and shoulders, and perhaps on the elbows, ribs and stifles; the case loses flesh and may have a fatal termination.

This last is the picture presented by the text-books; it is the picture of the disease under war conditions; but I think it necessary to draw particular attention to the very modified train of symptoms which may be found in well-cared-for animals.

(2) DIAGNOSIS.

Diagnosis can only be established with certainty by actual demonstration of the parasite. A naked-eye diagnosis may be erroneous. Several methods for the detection of the parasite have been described; one is so much better than the others that I depend upon it solely. This is to scrape a portion of the suspected area till blood oozes; to place the material obtained in a solution of liq. potassæ until all epithelium and hair are satisfactorily broken up, to add a small quantity of glycerine, and examine with a low power. Sometimes it may be necessary to examine many specimens, but it is a simple and successful method.

I do not undervalue the naked-eye appearances as aids to diagnosis, but they are not to be depended upon alone. I have seen cases considered to be simple eczema proved to be scabies, and a case which was thought to be scabies turned out to be a form of non-parasitic eczema.

There is a possible source of error even in microscopical diagnosis. Acari, other than those of scabies, are to be found on the skin of the horse, and at least two varieties cause great irritation. Examination of sweepings from a forage barn, or the dust of old woodwork, will disclose many varieties; and the same may be found in groomings from healthy horses. It is not a matter of great difficulty to differentiate them from the sarcopt of scabies, but it is necessary to make accurate observations upon them, for they are very frequently met with. As a general rule, and apart from their special characteristics, it will be found that such accidental acari are much more transparent than the sarcopt, and the chitinous folds of the skin are more faintly marked. *Dermanyssus* of the fowl and *pteronyssus* of the sparrow or lin-



Fig. 1 *



Fig. 2 *



Fig. 3.†



Fig. 4.†



Fig. 5.†

*Figs. 1 and 2 seen in debris from forage barn, in dust from stable beams and in groomings from a healthy horse.

†Figs. 3, 4, 5, 6, 7, 8 and 9 were found in skin groomings from healthy horses, and Figs. 7, 8 and 9, also found in forage dust.



Fig. 6.†



Fig. 7.†



Fig. 8.†

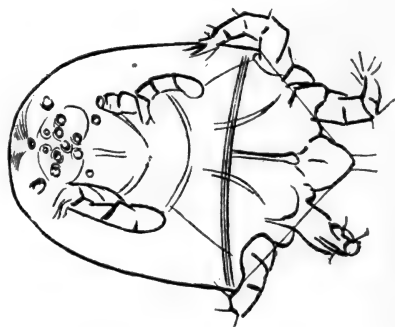


Fig. 9.†

net produce great irritation of the horse's skin. The latter of these I have met on three occasions. The shape and size of the parasite makes its differentiation easy, but as the irritation produced persists for a considerable time, and the consequent rub-

bing of the patient may cause excoriations and eczematous weeping of the skin, it is necessary to be accurate in the diagnosis of the affection.

(3) THE SPREAD AND RECURRENCE OF THE DISEASE.

The conditions described under "Symptoms" affect the spread of the disease in the most marked degree. In stables where horses are separated from each other it may be very slow. It even occurs that an outbreak may be confined to a solitary case, although it may have existed for a considerable time; and this is naturally more likely to happen in private stables, where each horse has its own attendant and equipment. In public stables, where the separation of individual horses is not so complete, and where constant changes of men and stable gear are more prevalent, the number of cases found affected in any given outbreak will generally be proportionately greater; and under war conditions, when animals huddle together and rub against each other, and when, moreover, infected equipment may be frequently transferred from horse to horse, spread is very rapid, and a large percentage becomes affected.

I do not propose to labor those details of transmission which are familiar to all veterinary surgeons, but I wish to invite your particular attention to what I may call "recurrences." An annoying feature of the disease is the discovery of a fresh case just as we are congratulating ourselves that the outbreak is overcome, and I have seen it happen at an interval of three months after the last case had been considered cured. These recurrences are, I think, simply due to the escape of some unusually hardy or fortunate individual or individuals which manage to carry on existence without attracting attention until conditions are favorable to them.

Certain of my colleagues hold that such recurrences are caused by fresh infection from parasites which have contrived to exist apart from a host, and some of the sarcoptidæ are certainly able to do so for long periods. Goodall records a case of *dermanyssus* of the fowl, which, having devoured its companions, was found

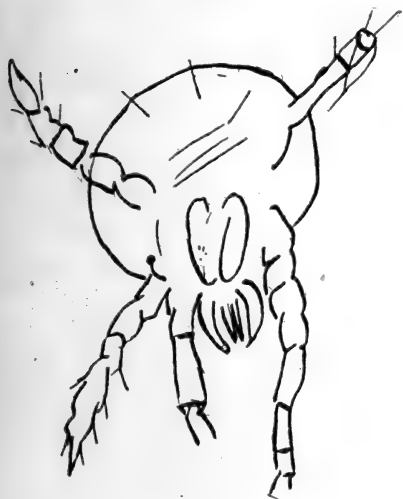


Fig. 10.†



Fig. 11.†



Fig. 12.||

†Figs. 10 and 11, from a sparrow's nest in the roof of a stable.

||Fig. 12. *Pteronyssus striatus* (?) of sparrow. From a horse.
Mag. about $\times 200$.

alive with unhatched eggs in a sealed box after many months; and Stockman has observed the psoropt of the sheep to live for six weeks apart from the animal: the longest recorded period for the sarcopt of the horse is twenty-eight days (Gerlach). I do not, however, think it necessary to argue as to the possibility of separate existence in order to account for these "recurrences" as a rule. Imagine a case infested with many thousands or millions of acari; it is quite possible that a single ovigerous female escapes destruction, or even that fertile eggs may survive, though we may have been most conscientious in our methods. It might, then, be a considerable time before any apparent symptoms were produced, and if the opinion previously expressed, that irritation may not necessarily be very marked, is correct, such a case would possibly escape detection for three months or more.

(4) TREATMENT.

In the choice of acaricides we have to consider their effect not only on the parasite, but on the patient. Partial or perfunctory dressings may palliate the case but will not eradicate the disease. The only safe method is to dress the animal all over, and the remedy should consequently irritate the skin as little as possible, but maintain its toxicity as long as required. Any application which causes severe irritation masks the disease and renders future observations more difficult. Watery dressings are not nearly so effective as greasy ones; greasy applications are difficult to remove, and if at all rancid blister the skin. Volatile substances do not retain their toxicity long enough to be useful. My own preference is for a mixture of sulphur, bicarbonate of potash and a bland oil. It is not ideal, but it is successful if thoroughly applied. In a few cases it causes irritation of the skin, but on the whole it does less damage than any other really effective dressing I have seen, and it can be relied upon. Previous to application the case should be clipped; the dressing should be left on for a week and gentle inunction practised daily. The patient should be well fed.

The disinfection of the stable and the animals' equipment must

be thorough to the minutest detail, and carried out at the time the dressing is applied.

In dealing with outbreaks in large bodies of horses, it is most necessary to have all details of treatment carried out systematically, so that no point shall escape thorough attention. Constant individual inspection and close clipping of the coat for a considerable period after treatment are also essential. The greatest factor in success is the personal element.

BRIDEGROOM HAS DOGCART RIDE—VETERINARY COLLEGE SENIOR WEDS OWNER OF HOSPITAL FOR PET ANIMALS—STUDENTS CELEBRATE—Six weeks ago Charles Babcock, who is in his senior year at the Chicago Veterinary College, happened to think that soon he would be out of school bucking up against the proposition of making a living for himself.

He had heard of Dr. Elinor McGrath, whose cat and dog hospital at 3247 Indiana avenue is said to be quite a prosperous institution. So he thought he would go out and see her and ask her to give him a few pointers about getting on in the world.

Yesterday Dr. McGrath and Mr. Babcock were married. A few hours after the ceremony Mr. Babcock was waylaid while in the veterinary college, which is at 2537 South State street. He was tied into a cart behind a nervous hound. Three hundred students with enough animals to stock a two-ring circus paraded up to the bride's cat and dog hospital. There are fifty-two patients in the hospital. They raised their voices and joined in the charivari.

The bride appeared, smiled at the assemblage, and at her husband, and expressed herself as delighted with the entire procedure.—*Chicago Tribune*.

UNIVERSITY DAY AT NEW YORK UNIVERSITY: October 10 was set aside by New York University for a union of all the schools of the university on the campus at University Heights. Students, professors and friends, representing each of the schools, greeted each other on the beautiful grounds with a common purpose, the promotion of good fellowship, and a better acquaintance among the several schools. The schools were generally well represented, and the day was a marked success.

THE ADVISABILITY OF A LIVESTOCK SANITARY BOARD IN NEW YORK STATE.*

W. G. HOLLINGWORTH, D.V.S., UTICA, N. Y.

In this great and good country and land of the free, everyone has the blessed privilege of being allowed to express his opinion on subjects which he thinks are right or wrong, especially if he is not seeking office or working for the interest of anyone. I have no unfriendly feelings. Everything so far as I know, at least so far as I am concerned with the Department of Agriculture of this state, from the Commissioner down, is agreeable. I have the most friendly feeling for all; but, gentlemen, friendship is one thing, business is another. I have an idea which no one can prevent me from expressing, and that is, the time has come, when a change must be made in the Bureau of Veterinary Service of the Department of Agriculture of this State. I am of the opinion that the best way to rectify the present undesirable condition that exists, (as I see it), is to establish a Live Stock Sanitary Board that would look more closely after the interests of the veterinary profession and the live stock interests in this state. I believe when a man takes a stand and thinks he is right he should have the courage of his convictions and fight it out. If he can be shown he is wrong and he can see it, he should retract his views, but stick, if he is right. Our profession today is a factor, yes, a power. Our number of qualified men are increasing. The result is that we must be recognized and consulted before any acts are taken that would in any way affect its standing. Why I say this is due to the bill that was introduced at the last legislature, "to amend the Agricultural Laws in this State." I contend that the drafter or drafters of this section of the amendment should have called a conference of veterinarians to discuss it before its introduction. I, as a member of the legislative committee of this society, felt it my

* Read at the twenty-fifth annual meeting of the New York State Veterinary Medical Society, Rochester, N. Y., August, 1914.

duty to go to Albany to oppose the bill, which I did, and I used every honorable means I could to do so. The present bill from our point of view is bad enough. Why put a bill on the statute books much worse? It did not get reported.

I believe the live stock interests in this state have outgrown their present quarters. They should be under a separate head or department, and that should be under the supervision of a regular and competent veterinarian. To me it is very unpleasant to think that a veterinarian who has spent years of study and expense to meet the requirements of the laws of this state, in order to practice; who is a guardian of health to the live-stock; a public benefactor and standing as a representative of a profession which is in a position to help lessen the mortality of the human race, because of his knowledge of sanitary medicine; should have to receive orders from a layman. That is what the chief veterinarian in this state has to do. It is no fault of the commissioner's. It is the law. We may not always have a man like Commissioner Huson as the head of this department. Suppose one fills the position who may be opposed to the advancement of laws, as we know they ought to be, and so issues orders. What a serious setback the live-stock interests would get. We all know what a change in politics means. That is, has and always will be the same, if there is not a change in the way of conducting our state affairs at Albany. We must not allow politics to interfere with our live-stock interests.

Now, under the present conditions of the Bureau of Veterinary Service in this state. what have we? A chief veterinarian, and a consulting veterinarian. It is very puzzling to me, and I am told other states, which are in a position to judge do not fail to censure us for such a condition of affairs. There must be a cause. I ask, why is it necessary to have two veterinarians doing one man's work, at a large extra expense? I do not blame anyone for accepting a position, if tendered to him, to get on the pay-roll of the state. The check comes in very handy each month. All I can say is that I am very sorry for the profession, and very, very sorry for the state, and the live-stock interest that such a condi-

tion is necessary. I say necessary, because there must be a cause. The commissioner must be conversant with it. I see no reason why one veterinarian could not attend to the duties of this office. If we have arrived at the time when we have no timber, so to speak, in this state capable of heading this office without having to create an extra office, let us go outside, if necessary, and pay the salary that the combined officials are receiving.

If this were done, gentlemen, the state would produce results. No department can run smoothly with two officers with equal power. Friction will, as sure as time, develop. And as soon as that occurs it will mean a retrograde movement, both for the veterinarian and live-stock interests. The producers are going to think over this matter seriously, if they have not already. There is no reason under the sun why they should not. It means dollars and cents to them. They are the ones who help pay for this un-business-like plan. Just think of the amount of money interested in live-stock and pet animals; over \$190,000,000, and rapidly advancing in this state, but for some reason the production is falling off. Something must be done to check it. It is a problem. I believe that the creation of a Live-Stock Sanitary Board, with a man at its head; a veterinarian, whose constant thought would be for the two interests in question, would be the way to solve this problem. He would be broad minded enough to appear before the governor or legislature, in such a forcible way, with statistics, that they could not refuse to take notice. By so doing, laws would probably go on the statute books, that would immediately bear fruit. Just think of it! New York State ranks second in milch cows. Fourteenth in other cattle. Fifteenth in number of horses. Twenty-fifth in hogs, and thirty-fourth in number of mules. Does anyone present consider this a good showing for this state, with its abundance of rich, fertile pastures and land under cultivation, from a state that is developing so much energy along the lines of agriculture? What would the agricultural interests amount to, without live-stock? They must go hand in hand. Our population is rapidly increasing. They depend on the producer to furnish them with food, and our servants at Albany owe to

them a duty to establish laws whereby such conditions can be brought about.

In closing I want to quote from Edward Everett Hale:

“ We must look up, instead of down,
We must look forward, instead of back—
We must look out, instead of in.”

Gentlemen of the veterinary profession of the State of New York, you must lend a helping hand.

PRACTITIONERS' COURSES—During the month of August (24th-29th) the Iowa State Veterinary College, Ames, Iowa, conducted one week of a two weeks' practitioners' course. The second week of the course is to be given during January, 1915. The course proved to be very successful, for about seventy-five practitioners registered for the week. The attendance and attention were excellent. This opens a new field for the veterinary colleges and should prove of great value to the busy practitioner, who is desirous of keeping up with the latest developments in veterinary medicine. A similar school was conducted at the Veterinary Department of the University of Pennsylvania last year and was so successful that it will be repeated this year. No doubt other colleges will inaugurate similar courses in the near future.

Dr. John Adams of the Veterinary Department of the University of Pennsylvania, and Dr. O. V. Brumley, '97, of the Veterinary College of the Ohio State University, assisted the Iowa State College faculty in giving instruction for the week.—*The Veterinary Alumni Quarterly*, O. S. U.

DR. YOUNGBERG MADE CHIEF—Dr. Stanton Youngberg, who went into the service of the Department of Agriculture in the Philippines, soon after his graduation from the veterinary school of the Ohio State University in 1907, was made Chief Veterinarian on June 1, last, at a salary of \$6,000 a year. The doctor entered the service as field veterinarian, and in 1909 was promoted to the position of supervising veterinarian, which capacity he filled until his promotion to chief on the resignation of Dr. A. R. Ward. The REVIEW congratulates the doctor on his rapid advance to his present excellent position.

INOCULATION AGAINST SWINE FEVER*

CONCLUSIONS OF REPORT, BY PROF. F. HUYTRA, BUDAPEST.

Swine fever may be successfully combated by serum injections and by simultaneous inoculations.

A potent serum confers immunity against both experimental and natural infection with the filterable swine fever virus, and indirectly against secondary bacterial infections (mixed infections). Animals that are injected with serum and simultaneously or shortly afterwards exposed to natural infection acquire a permanent active immunity. Serum injection is therefore indicated in the case of recently infected premises, and if the injections are made as soon as the presence of the disease is recognized they have the effect of rapidly cutting short the outbreak.

By the simultaneous methods pigs immediately acquire an active immunity which is lifelong. On previously healthy premises the simultaneous method, as a rule, causes little or no loss, but excessively severe inoculation reactions cannot be avoided. Until the inoculation reactions are passed great care must be exercised to prevent the spread of the disease.

PROF. GILL MAKES STIRRING ADDRESS: Prof. H. D. Gill, secretary of the faculty of the New York State Veterinary College, at New York University in New York City, and veterinarian to the New York State Department of Agriculture in charge of glanders in Greater New York, although he was not listed on the programme of the Eastern Live Stock Sanitary Association, and had no paper prepared for the recent meeting in Albany, N. Y., stirred the members of the organization by a rousing extemporaneous address in connection with the discussion on tuberculosis and glanders.

THE REVIEW IS BETTER THAN EVER: Dr. E. B. Carter, of Minnesota, in renewing his subscription to the REVIEW, writes: "It is better than ever."

* Reprinted. Tenth International Veterinary Congress, London.

REPORTS OF CASES.

INTERESTING CASES IN PRACTICE.*

By E. V. HOVER, D.V.M., Convoy, Ohio.

Case I. Fracture of the Left Metacarpus. Recovery. Subject was a yearling gelding of driving type.

Fracture caused by kick on inner and superior surface of the metacarpus, causing an oblique fracture extending downward and outward to two inches of the distal end of the metacarpus. The bones protruded from the wound at seat of injury, forming a compound, comminuted fracture.

Treatment. Colt was on a bed of hay. Limb disinfected with alcohol; wound dressed with tincture of iodine. A roller bandage was placed on over cotton, this lightly holding the bones in apposition until a plaster bandage was applied firmly over it. A window was made in permanent bandage for drainage of the wound. Colt was allowed to rise and put in slings for two days, then was lowered to a bed of straw. Result—recovery in six weeks.

Case II. Traumatism and Protruding Intestine. Recovery. Subject was a two-year-old Belgian mare. While eating grass around barn-lot her halter became caught in an old harrow, which frightened the animal, causing it to swing the harrow against the abdomen, producing a wound four inches long and into the peritoneal cavity. Examination revealed a loop of intestine two inches long protruding from the wound. Prognosis very unfavorable.

Treatment. Subject was given chloroform in standing position to complete anæsthesia. When patient was down the limbs were secured in casting harness. Wound was cleaned with a 1:1000 bichloride solution and tincture of iodine. Reduction was possible only after repeated trials; the serous coat of bowel was perforated also, making manipulations more dangerous. After reduction was complete, each layer of muscles was sutured separate. The skin was stitched with interrupted suture, using linen thread. The edema following for ten days was very great.

* Reprinted from *The Veterinary Alumni Quarterly*, College of Veterinary Medicine, O. S. U.

Treatment of wound. The first ten days a 1 : 1000 bichloride solution was used twice daily. Afterward irrigations of the normal saline solution were made twice a day. Internal treatment consisted of three-dram doses of calcium sulphide three times daily. Patient retained a good appetite, and a complete recovery followed.

Case III. Subject—pig. Called to a farm near town to see a pig which owner said was acting queerly. Examination revealed a case of tetanus. The pig had been castrated three weeks previous, and wound was apparently healed. Result—death. This is the only case of tetanus the writer has ever seen in a pig.

Case IV. Removal, Recovery. Subject—a four-year-old mare, partially broken for use, was brought in for examination as to cause of pus discharging from outer border of ear, above annular cartilage. At base of ear there was an enlargement about the size of a hulled walnut, hard and slightly movable. As the animal was quite refractory we decided to wait a few days until weather was more favorable for operation in open. This was done. An incision was made for the enlargement and an elliptical piece of skin removed. Then we discovered a hard fibrous capsule surrounding a hard body. This was dissected down to the bone and the hard object taken off with bone forceps. Care was taken to remove all the capsule and pieces of bone. The sinus in the ear was opened and dressed with boric acid and iodoform. The cyst proved to contain a well-developed but rudimentary molar tooth. Result—complete recovery.

Cases V. (a) Laryngo-pharyngitis. Lloyd's subcutaneous lobelia used. Subject—Belgian mare with strangles. She was treated by another veterinarian for two weeks, but a swelling which existed in the throat region was not reduced. Blisters and poultices had been used. While at the farm treating another patient for owner he called my attention to subject, and asked my advice, saying: "Everything the mare tries to eat or drink comes out through her nose." I told him that she could swallow by morning, so gave at once 20 c.c. Lloyd's lobelia subcutaneously. Result—animal ate and drank nicely in the morning, and made a complete recovery in a few days.

(b) Large Sorrel Mare—Roarer. Develops laryngitis. Breathing very difficult. We were to perform tracheotomy, but thought we would try a large hypodermic dose of Lloyd's lobelia. Accordingly, this was given. Results were phenomenal, the patient making a good recovery other than the chronic roaring symptoms. The writer has used lobelia hypodermically exten-

sively for four years and finds in all laryngo-pharyngeal affections, whether primary or secondary, it is beneficial. Also very useful in tetanus.

Case VI. Empyema of Frontal and Maxillary Sinuses. Subject—six months old filly. Had been treated for two months by an empiric for nasal catarrh. When our attention was called to it the respirations were so labored that asphyxia was threatening. Examination revealed enlargement over left maxillary sinus most prominent at lower end of the zygomatic ridge.

Treatment. The frontal and maxillary sinuses were opened, allowing a great quantity of pus to escape. The septum was broken down and an opening made into the nasal passage for drainage.

Result—colt made complete recovery in eight weeks without complications. This is interesting to us only because of age of subject. We found that our landmarks for this operation were at variance to those given in Professor Williams' text on surgical and obstetrical operations. In older subjects we found them fairly constant. In this subject an imaginary line drawn from the inner canthus of the eye to the opposite eye was the superior or highest point at which the cavity could be opened.

Cases VII. (a) Paralysis of Supra-scapular Nerve.

Recovery. We have had three cases of this form of lameness; all were in young working animals. It would take too much space to follow each case to its end, so we will append our treatment, which was as follows: Absolute rest enforced by deep injections of a sterile solution of turpentine and chloroform, the former seven drams and one dram of the latter.

R Oleum terebinthinae	28:00
Chloroformi	4:00

M. D. S. Inject 4:00 deeply in the muscles and repeat when swelling subsides.

In one case, which was so badly afflicted that the animal could not walk, we made fifty-six injections deep into muscles, without any abscess formations. At each treatment we would make six injections, using a dram at all six punctures. These animals all recovered.

(b) Radial Paralysis. Subject—large four-year-old gelding.

While running he fell over a wire fence. In a few days owner noticed horse dragging the limb. Owner called our attention to it, saying the horse had a broken shoulder. Indeed there was no muscle relaxation, and the gliding of the tendons over bony

prominences simulated crepitation very strongly. We diagnosed the case as radial paralysis and advised the owner to let him alone as far as external treatment was concerned. Internally we gave liquor potassi arsenitis for a time, but the owner soon got tired of treating him and eventually let him alone. Result—recovery in eight months.

Case VIII. Azoturia. Result—recovery.

Patient was a twelve-year-old driving horse. Had not been out of barn for days. Was found down in stall. Examination revealed a hardened condition of gluteal muscles. Black or high colored urine; in fact, all the usual symptoms of azoturia were present. Gave general treatment for azoturia and patient was able to stand after being down four days.

Cases IX. Obstetrical Case. Result—death.

(a) Cow, fifth calf. Had gone three months over normal gestation period. When found by the owner the cow was in labor and unable to deliver. We were called in to assist and on examination found a posterior presentation with hocks extended. The feet were drawn out through the vagina and traction put on them. After pulling more than we should have on any case of this kind we decided to cut the body of fetus in two as the head and shoulders would not come through the passage. We turned the neck, head and one limb around, but one limb we could not turn. As the cow was in a poor condition, we destroyed her and found the opposing limb had neither carpus nor humero-radial joint.

(b) Obstetrical Case. Death.

Small Jersey cow in thirteenth-month pregnancy. The body circumference at lumbar region was nine feet and eight inches. Diagnosis, hydropsamnion.

Treatment. A sterile horse trocar was inserted into the uterus in the lower right flank. Through this we drew off thirty-nine gallons of fluid. Cow began showing systemic symptoms, *i. e.*, short breathing, fast pulse and swaying, so trocar was removed.

Two days later another puncture was made and twelve gallons more were drawn or, making in all forty-nine gallons. The subject by this time looked much less than a cow. The neck of the uterus was dilated, and two days later the cow gave birth to a living calf which had a length of twenty-four inches from tip of nose to tail and was sixteen inches high. The cow was so weak and anaemic that we killed her two weeks later. The calf lived and did well.

METROPERITONITIS, CYSTITIS AND STONE IN THE BLADDER.

By CRITTENDEN ROSS, D.V.M., New York, N. Y.

The following interesting case recently occurred in the practice of Dr. Robert W. Ellis, and in the doctor's absence from the office, it fell to me to diagnose the case and treat the patient. The history of the case was as follows: During the past two years the patient had been noticed to urinate quite frequently during her daily exercise, and for two weeks prior to the time she was brought in for treatment (which, by the way, was six hours before she died), it had been noticed that a small quantity of blood was passed with the urine. She was not able to stand when brought to the office and the owner stated that she had not voided urine for two days. Because of the very low condition of the animal, then showing a rise of temperature to 104.8° F., an unfavorable prognosis was given. A linen catheter was passed, according to the method described by Dr. Heinrich Jacob (translated by Julius A. Jessen, D.V.M., of Irwin, Iowa), published in the *AMERICAN VETERINARY REVIEW*, April, 1913, page 80. There was no difficulty experienced in passing the catheter and no sensation to indicate the presence of a stone, a fact that may have been due to the pliability of the catheter. Two ounces of thick, mucilaginous urine, having a very penetrating odor, was obtained by catheterization. The bladder was then irrigated by means of the catheter with a permanganate solution, 1 to 10,000, and the patient placed on diuretic treatment, and, as the bowels had not moved for two days, a dose of *rhamnus purshiana* was administered. The dog retained the medicine only until it reached home, when it vomited it up, and in six hours from the time it had been presented to the office for treatment, it was dead.

Post mortem.—The bladder, with greatly hypertrophied walls, was completely filled with stones, varying in size from that of a pin's head to a good-sized marble; there being nine of the large stones, and hundreds of the small ones. I had counted seventy-five small stones, which appeared to be less than one-tenth of the mass, when Dr. Ellis requested me to desist, as he desired to have the specimen preserved just as it was, with the stones in their original position. The large stones remain just as they were found and can easily be counted in their places by parting the lips of the incision in the bladder; the small

ones counted were those that escaped when the incision was made. Bladder and stones weighed 54.3 grams after pickling 48 hours in formaldehyde solution.

The left cornua of the uterus presented three large distended portions which were distinctly separated by portions of contracted horn. These contained a very thick, mucilaginous, putrid material; and at the bifurcation of the uterus were numerous nodular growths.

STRYCHNINE POISONING IN ST. BERNARD DOG.

By CRITTENDEN ROSS, D.V.M., New York, N. Y.

Was called during the night to see a dog, the owner stating that it had had two fits. Upon my arrival, and stepping in the room beside the dog, it immediately went into convulsions. Attempting anaesthesia and administering H. M. C. for the later and more lasting action, the patient became quiet and remained so for about thirty minutes; when his master moved and the convulsions again occurred. The animal was then given chloral per rectum which quieted him for only a few minutes; then, strychnine being suspected, attempts were made to evacuate the stomach without success. Here, by a few questions, it was learned that about two and one-half hours previous the dog had been taken out for a walk and had left his master and was gone for some time and finally found waiting in front of the door. The owner was warned of the danger of a fatal termination, as the patient continued with the convulsions and ceased breathing after one of them. But since he was valued very highly, as a pet, by the entire family, artificial respirations were resorted to, and the patient resumed breathing again, only to suffer the agony of a few more convulsions, when he finally passed away.

The fact that several cats had died in the neighborhood about that time, suggests that poisoned food had been put out for them by some despicable person.

Post mortem: The stomach contained bones, a small quantity of sweetcorn, meat, and a large-sized piece of newspaper. The blood was a dark red color; all the blood vessels were congested; the kidneys were hemorrhagic and when cut the dark blood oozed out over the entire surface.

(Note—The post mortem was not held for a few hours after death.)

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

TOXIC RESULTS FROM THE MINIMUM MEDICINAL DOSE [*Gov. Veterinary Surgeon, F. J. Dunning*].—*Case No. 1.*—Horse had acute laminitis—refused to take draught, fought and became dangerous. One grain tabloid of eserine sulph. is dissolved in 10 c.c. of water—5 c.c. are injected intra-jugularly. As the author turns round to fill the syringe and give the other 5 c.c. the horse had his eyes rolled up back, his neck was arched and the animal dropped down to the ground as if shot. After a few seconds he got up, staggering. After twenty minutes the danger was over. During that time he trembled violently, sweated profusely, the breathing was accelerated, there was gasping, sobbing breath, pulse about doubled. Little peristaltis could be heard, but no evacuations took place.

What would have happened if he had received the second dose?

Case No. 2.—Cow had calomel and salts without results. Auscultation showed very little peristaltic action. One grain tabloid of eserine sulphas, strychnia sulphas and pilocarpine was dissolved and given hypodermically. In about five minutes the cow was in convulsions and soon expired.

It is the first time that the writer combined the three agents, it will be the last!

Question of the writer—What did the cow die from, the eserine, the strychnine or the combination?—(*Veter. Record.*)

ROARING BY PARALYSIS OF THE RIGHT VOCAL CORD [*Prof. F. Hobday*].—One very rare case indeed. Out of 950 roarers operated by the author, it is the only one where the right vocal cord has been found paralyzed.

The patient was a hunter, 12-years-old, which was bought as a roarer with the object of being operated. The operation was performed in the usual way and it was then that the condition of the cord was observed and seen by onlookers and veterinarians present. The operation was completed and the result will be published later on.—(*Veter. Journ.*)

FLANK METHOD IN MONORCHID CASTRATION [W. Carroll Patrick, F.R.C.V.S.].—Having had some disappointments in previous cases by the inguinal operation, the author decided to resort to the flank method. Horse was prepared, physiced, cast, chloroformed, usual antiseptic care taken; incision of the abdominal walls made, the tunica abdominalis incised, large enough to introduce the hand, the testicle was secured, the cord divided with the ecraseur, the organ removed and the abdominal wound closed with four stitches to the external oblique, five to the skin. The horse never missed his food.—(*Ibidem.*)

ABDOMINAL TUMOUR [Guy Sutton, F.R.C.V.S.].—A mare which had done some steady work for five years, was noticed one morning drinking a great deal and urinated profusely. She also began to loose flesh. No other trouble being present. After a week she quit her food, appeared hungry, took hold of her hay, but instead of swallowing she let it drop in the manger after chewing it a little. Her teeth were sharp and attended to. She kept in same condition. No diagnosis could be arrived at. After three weeks death took place. Post mortem revealed a large tumour, weighing 60 pounds, situated between the stomach, the liver and the spleen. It was a spindle-celled sarcoma.—(*Ibidem.*)

LUXATION OF THE OPTIC LENS [Capt. T. Lishman, A.V.C.].—Full grown lion performing in a circus had his sight so bad that it became unable to go through its performance. He was reported by the owner as having a white body inside the right eye, which caused so much irritation that the lids were kept partially closed and there was an almost continuous flow of tears. The examination, done under great difficulty, and not without danger, revealed that the white body was a cataractous lens in the anterior chamber of the eye, which had become fixed to the posterior surface of the cornea through the keratitis it had occasioned. Both pupils were much dilated. While the animal was being examined, he gave a sneeze and the lens of the left eye jumped from the posterior to the anterior chamber. The owner declined to have an operation performed.—(*Veter. News*).

PASTEURELLA ISOLATED FROM POLL EVIL [Wm. Scott, F.R.C.V.S.].—Aged cart gelding had been operated for poll evil and received three injections of autogenous vaccine, composed of staphylococci (aureus and albus).

At some date between the 2d and 3d injection a swelling occurred between the ears, which gradually increased in size and soon was as big as an orange. The apex of this became fluctuating, was lanced and gave escape to thin, grey, non adhesive pus, slightly bloody. From this pus, cultures were made. On agar, small, white colonies developed. On gelatine, they were more apparent the medium not being liquified. In broth, a granular sediment developed. On potato no growth took place. Milk was not coagulated. A slide was stained, and the fluid showed a gram negative bacillus, short, with rounded ends and bipolar staining. The organism was not motile.

Has bipolar staining bacillus in region of the poll ever been observed before?—(*Veter. Record.*)

FRENCH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

A RARE CASE: TOTAL COECAL INVAGINATION IN LARGE COLON [*Mr. Nieder, V.S.*].—Fine Percheron mare, eight years old, doing very hard work (is, however, in good condition), aborts an eight months' fœtus, and forty-eight hours after has dull, intermittent colic, which does not pass entirely by simple treatment. As she has some constipation, castor oil is administered, with good results, and the colic subsides. There remains, however, a diarrhea of bad odor, which resists to opiate and intestinal antiseptics. Still the mare has fair appetite; the digestion seems difficult, as she has dull abdominal pains which pass off when digestion is completed. Soon the animal loses flesh, and the condition becomes alarming. After some hesitation the owner has her destroyed, after an illness of over a month. At the post mortem there was found a complete invagination of the cœcum in the first portion of the large colon, which by its appearance and the lesions that it offered showed that it must have had its origin at the beginning of the trouble and had been the cause of the long series of manifestations.—(*Bulletin de la Soc. Cent.*)

MARE PSEUDO-HERMAPHRODISM IN HORSES [*Mr. Peset*].—A nine-year-old horse can, at superficial examination, be taken for a mare; he has mammae, and by raising his tail there is exposed a vulva, widely open by a clitoris largely developed. Yet the subject is only a stallion with congenital malformations. Back of the teats, there are two atrophied testicles, with their cord

running in the inguinal canal. If that which resembles the clitoris is pulled outwards it stretches so as to become about the size of a normal penis. The numerous folds that cover it, form the appearance of the vulvar lips, when the organ is not drawn. The extremity of the penis is smaller than ordinarily, and less in shape of the top of a flower watering pot. The horse is seldom in erection; when he is the penis is nearly as big and long as that of a middle-sized horse. It projects horizontally backwards and is slightly curved upwards. Near mares the horse remains generally quiet. He is always doing his work quietly and shows a kind and good disposition.—(*Ibidem.*)

FIBRO-MYXOMA OF TURBINATED BONES IN HORSES—OPERATION—RECOVERY [*Adjunct Prof. Lebasque*].—Gelding has been bought cheap because of a bilateral discharge from the nose and because he roars loudly even at rest. The discharge is mucopurulent, looks like that of a chronic coryza, is not bloody and adheres some to the wings of the nose. Submaxillary and glossal lymph glands are swollen. In the right nasal cavity there is an ovoid mass closing it completely and pushing the septum nasi to the left. It can be pushed up in the cavity with the fingers, but returns to the anterior entrance of the nose as soon as pressure is stopped. All the great functions are normal. Malleine test is negative. The diagnosis is certain; it is a benignant tumor of the nasal cavities, and an operation is indicated. After preparation and a temporary tracheotomy, because the horse roars so and is threatened with suffocation, the trephining of the nasal bone, operation of Sind, is performed; opening the nasal canal from downwards upwards, instead of from up downwards as in the classical operation. The peduncle of the tumor was exposed, excised, and the growth squeezed and pulled out by the right nostril. Hemorrhage was stopped by plugging with gauze and the cutaneous wound suture. Opening for drainage was left. Recovery was uneventful. The recovery was complete; no more discharge; no more roaring.

The tumor measured 20 to 22 centimeters in length, 8 to 10 in width, 5 to 6 in thickness. It was divided in lobes by deep fissures and was cartilaginous at its inferior extremity. It was a fibro-myxoma with cartilaginous transformation.—(*Ibidem.*)

SERO-DIAGNOSIS OF PREGNANCY IN MARES is the title of Technical Bulletin No. 5, Miss. Agr. Exp. Sta., by Chas F. Briscoe, Ph.D., and E. M. Ranek, V.M.D. The subject is extremely interesting and the bulletin very instructive

CORRESPONDENCE.

A DAY IN FRANCE.

CHICAGO, ILL., October 1, 1914.

To the Editor of the AMERICAN VETERINARY REVIEW:

To many of the readers of the REVIEW who have had the pleasure of meeting and knowing Dr. Liautard, a brief account of a recent visit to his charming home in sunny France may have more than a passing interest.

It was a delightful morning the latter part of July when Dr. Ackerman and I left Paris for Vernon, a typically French village, some forty or fifty miles north of Paris. France was new and, of course, very interesting to us. We had spent a few days



Summer Home of Professor Liautard.

sightseeing in Paris, but the country we had seen very little of. We fairly hung out of the windows of the train and "rubbered" and compared the crops and methods with those of America.

As the train pulled into Vernon the conductor by vigorous gestures indicated that this was our destination. It's easy to understand French when they combine the vocal sounds with gestures that indicate that you are to get out.

Here at the station was the doctor looking as young and

vigorous as when I first knew him twenty or more years ago. The same genial welcome; the same merry twinkle of the eye; the same hopeful boyish outlook upon life; the same charming simplicity of manner. One only hopes that they may possess all these qualities when they have reached the four-score years.

Entering the limousine we were whirled away some three miles over beautiful macadam roads to the chateau, or country place at the Bois-Jerome, which we approached by a winding private road through the forest, the Bois-Jerome being a private game preserve and country residence. The accompanying cut does not do justice to the beauty of the place. We walked down one of the forest paths past the pheasantry, where hundreds of young pheasants were being raised and allowed to run wild; by the fishpond where the doctor fishes and when the fish won't bite where he says he "cusses" some. You who know him will understand that—and all the time we talked, or rather we listened, as the doctor told us of his work at the American Veterinary College in New York and on the AMERICAN VETERINARY REVIEW. With moistening eyes he showed the gold medal watch fob struck in his "image and likeness" for the semi-centennial celebration of the A. V. M. A. in New York last year. Events such as these crown the life-work of but few. We only know that in this case they were deserving monuments to an active, well-spent life.

Mrs. Boyer, the doctor's charming daughter, joined us in the forest and reminded us that lunch was ready. It seemed almost irreverent to break into such a delightful time with such a common-place event as eating, but the skilled chef had prepared a luncheon that even now haunts my memory; and so the few short hours passed, broken only by the doctor's slipping away at frequent intervals to the bedside of his life's companion, who was waiting, waiting, for the grim messenger.

Back to the village of Vernon we went through shady forest roads and across the sun-lit valley and past cliffs with great caves where large quantities of mushrooms are raised for the markets.

We said good-bye at the station. It may be long before we meet again, but we shall greet him frequently through the pages of the REVIEW.

So we passed one of the most delightful days of our trip.

How eagerly since then have we watched the papers, fearful lest War had laid his ruthless hand upon the beautiful country home not only of *our* friend, but the friend of every American veterinarian, and one who has done so much for our profession.

N. S. MAYO.

NEW ORLEANS ROUTE FROM CHICAGO.

CHICAGO, ILL., October 13, 1914.

Editor AMERICAN VETERINARY REVIEW, New York:

I have had numerous interviews recently with representatives of the various railroads running directly and indirectly from Chicago to New Orleans. These representatives (and they are good fellows too) ably presented the merits of their respective roads. After careful consideration I have selected the Illinois Central as being the most direct and quickest route from Chicago to New Orleans. The "Panama Limited" leaves Chicago at 6.35 p. m. and reaches New Orleans at 8.55 the next night. Those who prefer to leave Chicago in the morning can do so on the "New Orleans Special," leaving Chicago at 9.10 a. m. and arriving at New Orleans at 10.45 the next morning. Tickets can be arranged to go or come by way of Vicksburg, thus affording an opportunity to visit the National Park there. Both of these through trains are electric-lighted and carry dining and observation cars. Most of the veterinarians will leave Chicago on the Panama Limited, leaving Chicago Saturday night, December 26, at 6.10 p. m. All those wishing to go by this train should notify R. J. Carmichael, div. passenger agent, Chicago, who will arrange reservations. Special Pullman cars will be supplied if there are enough applications.

Those who wish to go by way of Nashville, Tenn., Birmingham and Mobile, Ala., can take the Chicago and Eastern Illinois and Louisville and Nashville railways and can leave Chicago at 12.35 noon and reaching New Orleans at 8.55 p. m. the next night.

Those who wish to go by way of Chattanooga, Tenn., and visit Chickamauga Park can leave Chicago over the "Monon" at 9.10 a. m. and reach New Orleans the second morning over the Queen and Crescent at 9.10 a. m.

The winter tourist rates from Chicago to New Orleans and return, good until June 1, is \$37.40. I have applied to the Southeastern Passenger Association for a special reduced rate for our meeting, but there has not been time to determine whether we can get it or not. The winter tourist rate is good over all roads.

The transcontinental passenger association do not give special rates for our meeting. The regular nine months tourist fares are in effect from California and north Pacific coast points. The

rate from California to New Orleans being \$104 for the round trip.

The Pullman fare from Chicago to New Orleans is \$5.50 for a lower berth and \$4.40 for an upper.

Be sure and write to the passenger agent of the railroad you want to travel over or to me, stating just what train you want to take, and arrangements will be made.

N. S. MAYO, Secretary.

No. 4753 Ravenswood avenue, Chicago, Ill.

THE NEW ORLEANS MEETING.

CHICAGO, Oct. 16, 1914.

To the Editors AMERICAN VETERINARY REVIEW, New York:

The New Orleans meeting of the A. V. M. A. is less than two months away and every member should plan now to attend this meeting which will be an unusually important one.

There is the important subject of reorganization and a revision of the constitution and by-laws. The question of changing the present plan of reports of the annual meeting and other equally important questions need careful consideration.

In sending out bills for membership dues for the coming year a letter was sent to every member calling attention to the important subjects that needed consideration and I wish to emphasize it again here.

The programs for the two sections are nearly completed. If any veterinarian has any important subject that he would like to present to the section on *Veterinary Practice* or *Sanitary Science and Police*, I will ask them to notify me at once.

The veterinarians are arranging for a splendid meeting and it is the duty of every member to make a special effort to attend this meeting in New Orleans. If you have never visited New Orleans, it will be one of the most enjoyable trips imaginable; if you have been there I know you will not be able to stay away. The only thing I fear is that those who attend this meeting will want it held in New Orleans every year.

N. S. MAYO.

ILLMO VETERINARY MEDICAL ASSOCIATION.

COLLINSVILLE, ILL., October 20, 1914.

Mr. Editor.—The next meeting of the Illmo Veterinary Medical Association will be held at the National Stock Yards Hotel, National Stock Yards, E. St. Louis, Ill., on the 20th of November, 1914.

Election of officers, a visit through the various abbatoirs conducted by Dr. E. L. Bertram, Inspector in charge, also a visit through hog cholera serum plants, general discussions, a query box, and plenty to eat are among the leading parts of the program.

Remember, November 20, 1914, E. St. Louis.

Yours mutually,

DR. L. B. MICHAEL,
Secretary.

LETTER FROM DR. HOSKINS.

CHICAGO, October 3, 1914.

Editor AMERICAN VETERINARY REVIEW, New York:

The following letter from Chairman Hoskins, Legislative Committee of the A. V. M. A. is self explanatory:

“DR. D. ARTHUR HUGHES, 4193 South Halsted Street, Chicago, Ill.

DEAR DR. HUGHES—I have just telegraphed you for such circulars as you have and can spare. One of our colleagues who has business relations with many influential people over the United States has started a movement among them in behalf of our bill. Of course every new centre of activity has its value now in keeping it before the senators from new sources.

I was in Washington on Wednesday last and after conferring with Senators Kern, Lea and Chamberlain, the latter advised our seeking an interview with Senator Hitchcock, which Dr. Turner and I proceeded to do. We were given a very cordial hearing by Senator Hitchcock and later a like hearing by Senator Thomas. They both admitted the error of their information as to pensions and retirement and gave evidence that they would not seriously oppose the bill and *subrosa* both expressed the opinion that it would pass in the face of any opposition they might exert

against the bill, as it was an administration or rather Department measure. So I felt that we had put in a good day's service.

Every piece of literature, numbering over 30,000, has gone to individuals, not in packages but in separate pieces; thousands of letters in addition have gone out, not to speak of the thousands of bulletin letters.

Our efforts from now on must be to gain consideration for our bill. There are forty to fifty bills on the calendar to be considered and we must have ours among the number.

I shall go to Washington and remain there the last three days of the session, when the time is fixed for adjournment, probably October 15, 1914.

Yours very truly,
(Signed) W. HORACE HOSKINS."

D. ARTHUR HUGHES.

DR. KAUPP RESIGNS COMMISSIONERSHIP TO ACCEPT CHAIR OF PATHOLOGY AT THE NORTH CAROLINA AGRICULTURAL AND MECHANICAL COLLEGE—Dr. B. F. Kaupp, Commissioner of Public Health, Spartanburg, S. C., has resigned that position to become pathologist at the Agricultural and Mechanical College of North Carolina, where he will also be in charge of the research department and will have special charge of investigations in the poultry department at the government experiment station. Although the resignation takes effect November 10, Dr. Kaupp's successor had not been appointed at the time of his letter to the REVIEW, October 14. The doctor was a great success as a health commissioner and Spartanburg regrets to part with him, but the new position gives him greater scope for his talents as a pathologist, and to follow out his work in connection with poultry diseases.

PASTEURIZATION OF SKIMMED MILK is the title of circular No. 31, published by the State Live Stock Sanitary Board of Pennsylvania, by C. J. Marshall, State Veterinarian, and Dr. W. H. Ridge, an agent of the Board, which is very interesting and instructive. This was accompanied by circular No. 28, which includes a sketch of a simple and inexpensive pasteurizing device for use in a creamery. Further information on this device can be obtained by communicating with Dr. C. J. Marshall, secretary of the Board, Harrisburg, Pa.

BIBLIOGRAPHY.

VETERINARY STATE BOARD QUESTIONS AND ANSWERS.

VETERINARY STATE BOARD QUESTIONS AND ANSWERS, by V. G. Kimball, D.V.M., Assistant Professor of Veterinary Medicine, University of Pennsylvania. Nearly 400 pages. Philadelphia and London: J. B. Lippincott Company, 1914.

Appreciating the advantages of self-quizzing to the student who desires to fix firmly in his mind the subjects to which he is applying himself, the author has compiled this estimable work, covering every phase of veterinary medicine and surgery. He has accomplished more than the mere production of a book of questions and answers on veterinary science; he has placed at the disposal of the graduate veterinarian desirous of taking a State Board examination, a list of questions and answers that have actually been given by State Boards in ten or more different commonwealths, eastern, middle and western. So that, while these questions are not likely to be repeated, they represent the class of questions that are asked by State Boards generally. Many young graduates fail in State Board examinations that have passed very creditable examinations by the several members of their college faculty. Why? Because the questions mystify them—they do not understand what the question conveys—what the querist wants to know? We have said it is not likely that any of these questions will be asked again, and yet, upon reflection, when we consider that Prof. Kimball was obliged to eliminate from his collection hundreds of duplicates, it is altogether likely that many questions, very similar to those compiled in his work, or at least along the same line of thought, will be asked by other State Boards, or unconsciously repeated by the Boards that have already asked them. At all events, they are all useful practical questions and students attending colleges and graduates intending to take State Board examinations would do well to study them. As a matter of fact, a little self-quizzing in this book will do us all good—and the longer we have been in practice the more essential it is to us, and the more interesting it is to us. And while we may not agree with *all* the answers, we will learn

something from them all. It is especially valuable to the practitioner who anticipates taking a civil service examination, as it will sharpen him up on many points upon which he has become dull. Being carefully indexed, the busy practitioner can turn to any subject he desires to consult, and there is the question he is pondering in his mind, and there also is the answer to it. The book also contains six pages of prescriptions, with an average of four on a page. Some examples of the prescriptions taken at random will give some idea of the value of that part of the work.

Question. Write a prescription for a purgative.

Answer. For Mr. Brown's bay horse. Jan. 2, 1914.

℞
 Aloes Barbadosis 3x
 Hydrargyrichloridi mitis gr. xxx
 Pulveris zingiberis 3 iss
 Theriacæ qs.
 M. et fiant bolus No. 1.
 Sig.—For doctor's use.

John Doe, D.V.M.

Question. Write a prescription for round worms in the dog. Give full directions.

Answer. For Miss Smith's dog. Jan. 2, 1914.

℞
 Santonini }
 Hydrargyrichloridi mitis } āā grs. iv
 Sodium bicarbonatis 3i
 M. et div. pulv. No. viii.
 Sig.—Fast dog 24 hours, then give one powder every hour until all are given.

John Doe, D.V.M.

And so we might go on. One calls for a prescription for a two-weeks-old calf suffering from diarrhea; another for a horse whose temperature is 105, respiration 30 and pulse 75 but strong, the medicine to be given in liquid. Another for mange in a dog, and still another for a purgative for a 900-pound cow. Those are enough to show the diversified field that the author has been careful to cover. In short, *Kimball's Veterinary State Board Questions and Answers* is indispensable to the student and young graduate facing a State Board or civil service examination, and invaluable to the practitioner as a refresher and ready reference book.

The book is printed in good, sharp type on good paper and bound in the typical Lippincott binding of dark red with gold lettering.

TEXT-BOOK OF GENERAL THERAPEUTICS.

TEXT-BOOK OF GENERAL THERAPEUTICS FOR VETERINARIANS, by Eugen Fröhner, Privy Councillor and Professor of Special Pathology and Therapeutics in the Veterinary College at Berlin. Authorized Translation from the Fourth Revised German Edition, by Louis A. Klein, Professor of Pharmacology and Veterinary Hygiene in the School of Veterinary Medicine at the University of Pennsylvania, and Dean of the Faculty. 300 pages. Philadelphia and London: J. B. Lippincott Company.

This fourth edition of Fröhner's Text-Book of General Therapeutics is strictly up to date; having kept pace with the advanced knowledge of veterinary medicine, gained since the publication of the last edition. This not only applies to therapeutics, but also prophylaxy in the form of protective vaccine, in which many changes of view have occurred in the past ten years. Following the *Introduction*, is *The History of Therapeutics*, which includes the theories of Hippocrates, Galen, Paracelsus, Boerhaave, Brown, Rademacher, The Homœopathy of Hahnemann, The Cellular Pathology of Virchow, The Serum Therapy of von Behring and The Chemico-Therapy of Ehrlich. These are most interesting and instructive chapters, extending back into the remotest antiquity, and the matter contained in them full of wonder and enlightenment for the student, and furnishing convenient statistical references for the practitioner.

The first subject treated in the book proper is *General Therapeutics of the Diseases of the Organs of Digestion*, dealing first with the stomach, its pathology, physiology and mechanism, first of the single stomach and then of the stomach of ruminants. So that the student may study the stomach of all the domestic animals under one short chapter, and the practitioner can refresh himself on any stomach with which he may be dealing, with like convenience. After mechanism comes the chemistry of gastric digestion, therapeutic methods, dietetic treatment, and finally, medicines, stomach remedies, etc., etc., fully describing each remedial agent, its indications, dosage, etc. *General Therapeutics of the Diseases of the Intestines* is treated in the same way. And so with all the different organs and parts of the body, the glands, the eye, the skin and mucous membranes, etc., etc., each apparatus is taken up in turn, and after a survey of the physiology and a review of the pathological changes to which it is liable, the therapeutic methods which may be used to correct these changes are presented, including a list of the drugs indicated. This novel method of discussing therapeutics, entirely different from that in other works, will, we feel sure, be very much appreciated, as it simplifies matters very materially.

Considerable space is given to *Disinfectants* and *Antiseptics* and to *Vaccination, Immunization* and *Inoculation*. And the final chapters deal with *Water as a Remedy—Hydrotherapy, Massage, Electricity as a Remedy—Electrotherapy, Bleeding, Indifferent Remedies—Mechanicals* and *Air as a Remedy*.

The value of this work to the veterinary practitioner was so fully appreciated by Prof. Klein that he determined to translate it into the English, that American and all English-speaking veterinarians might be able to avail themselves of it. Its excellence as a text-book is further attested by the fact that it ran into its fourth edition in the original language in which it was published.

Bound in cloth in a deep rich shade of red with gold lettering, it makes a handsome addition to the veterinarian's library.

THE FIRST ANNUAL RECEPTION AND BALL given by Chicago Branch No. 1, National Association Bureau of Animal Industry Employees, was held in the ball room and parlors of the new Stock Yard Inn, which is the prettiest, if not the largest, ball room in Chicago. Even though the weather was unfavorable, the function was well attended, 125 to 150 couples being present. It was an occasion of mirth and merriment throughout, all present being pleased with the program and were reluctant to leave when the last number was played. Among those in attendance, in addition to Bureau of Animal Industry employees of all classes, were several members of the Chicago City Council, Live Stock Commission men, employees from all departments of the various packing industries and many other prominent Chicago business men. It had been arranged to have Dr. and Mrs. W. N. Neil lead the B. A. I. grand promenade, but at the last moment Dr. Neil 'phoned that he was unable to attend owing to illness at his home. Hence Mr. and Mrs. Patrick Kenny led the march in lieu of Dr. Neil, and this march proved one of the unique features of the ball. Mr. Kenny is a very enthusiastic meat inspector member of our Chicago Branch No. 1. The first number on the program was a waltz, "Adele," dedicated to Dr. W. N. Neil, inspector in charge of the Bureau of Animal Industry forces in the Chicago district. The sixth number on the ball program was a waltz, "Wedding of the Winds," dedicated to our president. The ninth number being a two-step, "Good Ship Maryann," dedicated to our national secretary. One feature that made quite a hit was the official emblem of the N. A. B. of A. I. E., being printed on national colors on the tickets and reception and ball programs.

S. J. W.

OBITUARY.

DR. T. F. RICHARDSON.*

Friday night, August 28, at 8 o'clock, Nevada lost one of her foremost scientists through the death of Dr. T. F. Richardson, of Fallon. While Dr. Richardson was a veterinarian, he was looked up to by the members of the human medical profession as a man from whom they could learn much; a man who took pride in being posted in all things medical, no matter whether veterinary or human.

Dr. Richardson died a hero, as his death was directly due to anthrax infection, following an effort on his part to overcome an epizootic of that disease in Churchill county. He, with several other scientific veterinarians, had recently accepted his commission as local quarantine officer for his county, to look after various infections in the stock thereof and to overcome them, if possible, and he entered into the duties of his office with the same vigor as had been invariably shown by him in all of his work. While holding a necropsy over a cow which had died of suspected anthrax, the week prior to his death, his left hand became infected while he was obtaining specimens to be forwarded to the State Hygienic Laboratory. A specimen from his own hand was forwarded to the laboratory a few days later, and Dr. Mack, the director, reported back, "Richardson specimen positive for anthrax." And thus died a man, worth while, in the very prime of life and while following his vocation in that his fellow beings might profit thereby and that humanity might be protected from possible infection. While his dealings were with the brute animals, he was as much a hero as have been those who,

* *Denver Medical Times—Utah Medical Journal—Nevada Medicine.*

in human medicine who have met with and obliterated the epidemics of the plague, yellow fever, malaria and other infections of that character. He, like them, took a chance, and died, in that not only the dumb brute might survive, but that his fellow humans might be protected.

In addition to being a scientific veterinarian, Dr. Richardson, as a hospital steward in the regular army and as operating assisting in the hospitals in Manila, during the Philippine campaign, had become well posted in human, before taking up veterinary medicine, and he had always followed the study of both sciences very closely. After leaving the service he took a course in veterinary medicine in the University of Oregon, graduating with honors. After practicing in the northwest for a short time, he located, during the boom days, in Goldfield, where he resided for several years, or until after 1907, when he relocated in Fallon, and where he resided until the time of his death. Under Governor Sparks, Dr. Richardson served as State Veterinarian for several years. He continued in this office until the legislature of the state, seeing no further benefits therefrom, abolished the office, through refusing an appropriation for its sustenance. In 1911, following an outbreak of glanders in Churchill county, the doctor was made provisional state veterinarian and not only cared for and overcame this epizootic, but handled those of hog cholera in Mason valley and elsewhere and anthrax in other sections. With the passage of the quarantine law, placing prophylactic work in the hands of the State Hygienic Laboratory, Dr. Richardson again retired to his private practice, in and about Fallon, which work he followed until a few weeks before his death, when Governor Oddie commissioned him as local quarantine officer to contend with such infections as might occur within the stock of his county and surrounding country.

Dr. Richardson was a man of more than ordinary energy and entered everything with an idea to win. In addition to his professional duties, he took an interest, and that more than passing, in everything occurring in his home town and country. It was he who introduced many new ideas in farming on his ranch on

the Island ranch south of Fallon. It was he who was largely instrumental in bringing about better hygienic conditions in Fallon.

Dr. Richardson was a man of pronounced political views, but not one who made enemies through the pronouncement thereof. Although a Democrat by conviction, his friends among the Republicans were legion. He never allowed politics to enter and interfere with personal friendships and would fight just as hard for the interests of a political enemy as for one of his own faith. He was a friend in whom one could depend at any and all times and those who knew him had a love for him which nothing could destroy. We who knew Dr. Richardson know that Nevada has sustained a loss which will never be regained.

Nevada Medicine extends its sincere sympathies to those who mourn Dr. Richardson's death, his wife, Mrs. Margaret Richardson, and little son, Jack.

BELGIAN QUEEN ANIMAL LOVER AND EXPERT JUDGE OF HORSES AND DOGS: Queen Elizabeth, of Belgium, who is a graduate in medicine from Leipzig, and the daughter of a world-renowned oculist, Duke Charles Theodore, of Bavaria, is said to have an expert knowledge of horses and dogs (of both of which she is passionately fond), and is a splendid whip and horsewoman. She never fails to be present at the weekly inspection of the royal stables at Laeken, when the hundred or more horses are examined by the court veterinarian. She is utilizing her knowledge of medicine at present in caring for wounded soldiers.

VETERINARIAN INFECTED ON WRIST WITH CHARBON—OPERATED UPON WITH HOPE OF RECOVERY: The Waco, Texas, *Times* of September 29 states that Dr. J. E. Warner, of that place, while vaccinating cattle had become infected on the wrist with charbon. The spot, very small at first, grew rapidly to the size of a silver dollar, when Dr. Warner consulted a physician, who made a diagnosis of charbon, and sent him to a sanitarium where the infected spot was burnt out.

SOCIETY MEETINGS.

MASSACHUSETTS VETERINARY ASSOCIATION.

The regular meeting of the Massachusetts Veterinary Association was held at the New American House, Boston, Wednesday evening, May 27, 1914. Members present were: Drs. Babbett, Babson, Abele, Cleaves, Dodge, Emerson, Howard, Kingman, Maloney, Peirce, Playdon, Seale, Wight, Winslow, Winchester and Pugh. As honored guest we were fortunate in having Colonel Borden, of Fall River, Mass.

President Seale called the meeting to order at 6.30 p. m. and requested the secretary to read the records of the annual meeting and banquet, and on motion by Dr. Cleaves, seconded by Dr. Babbett, they were accepted as read. Consideration on resolutions on the deaths of Drs. Lamb and Madden were taken, and the following committee was appointed: Drs. Cleave, Babson and Playdon.

Dr. Maloney then introduced Colonel Borden who gave a most excellent talk on the description and history of the Arabian horse—from the foundation of his breed to the present, with numerous illustrations and life portraits of the most famous of his kind. At this juncture, Colonel Borden was given a rising vote of thanks, and a buffet luncheon was served, after which the president called the members to order for a second business session, and on motion by Dr. Playdon, seconded by Dr. Babbett, it was voted that this association accept the kind invitation of Dudley P. Rogers, complimentary to Dr. Moore, to visit Weathersfield Farm at Danvers, Mass.

Dr. Peirce offered an amendment which was accepted by Dr. Playdon, and seconded by Dr. Cleaves, that the date of the visit to Weathersfield Farm be fixed by the entertainment committee.

The next subject for consideration was that of the June outing, at the Relay House at Nahant and the enjoyment of a shore dinner. Dr. Howard moved, seconded by Dr. Winslow, that Dr. Babbett be appointed a member of the already existing entertainment committee for the occasion, which the president declared a vote.

Dr. Wight said that, although contrary to the customs of the association, he wished to make a motion, which was seconded

by Dr. Abele, that members, in addition to being privileged to invite their male friends, be also privileged to invite their wives and lady friends, which was carried. Dr. Abele said that he was glad to see the reports of our meetings published in the REVIEW, and further said that by giving good entertainment we would surely have better attendance. Dr. Wight said he agreed with Dr. Abele and suggested that if any member knew of a good speaker, whether his subject be on the horse, ox or dog, he should not fail to mention him.

W. T. PUGH, Secretary.

BRITISH COLUMBIA VETERINARY ASSOCIATION.

At the annual meeting of the British Columbia Veterinary Association, held in Vancouver on the first of October, the amount of two hundred and fifty (250) dollars was donated to the general war relief fund. This action by the veterinarians of the province has created a very favorable impression, for although the organization is a comparatively young one it has proven itself in this and other instances to be one of far reaching usefulness; with its fields of endeavor by no means confined to the veterinary profession alone.

The officers elected for the current year are: President, Dr. S. F. Tolmie, Victoria, B. C.; Vice-President, Dr. J. W. Darby, Vancouver, B. C.; Secretary Treasurer and Registrar, Dr. H. W. Jakeman, New Westminster, B. C. Council: Dr. S. Ransam, Vancouver, B. C.; Dr. T. H. Jagger, Vancouver, B. C.; Dr. Geo. Howell, Vancouver, B. C.; Dr. A. J. Damman, Vancouver, B. C.

H. W. JAKEMAN,
Secretary.

ILLINOIS STATE VETERINARY MEDICAL ASSOCIATION: Secretary Merillat announces the dates of the above association as December 3, 4 and 5, at Chicago; which will, as has been the custom for several years, follow the United States Live Stock Sanitary Association meeting.

DR. WEBSTER GETS ARM BROKEN: Dr. L. E. Webster, of Effingham, Ill., was thrown from his buggy and his arm broken, in the neighborhood of Watson. His horse became frightened at a passing automobile and ran away, causing the accident, is the statement of the *Republican* of Effingham, October 1, 1914.

NEWS AND ITEMS.

MAILING LIST OFFICERS NATIONAL ASSOCIATION, B. A. I. EMPLOYEES.

President, Dr. J. E. Gibson, room 10, Douw Building, 422 Broadway, Albany, N. Y.

First Vice-President, F. C. Krehl, 583 18th street, Milwaukee, Wis.

Second Vice-President, David Richardson, rooms 104-105, L. S. Ex. St. Yd. Sta., Ft. Worth, Texas.

Third Vice-President, Stephen Bray, LL.B., room 800, L. S. Ex. Bldg., Kansas City, Mo.

Fourth Vice-President, F. McCarthy, 965 Greene avenue, Brooklyn, N. Y.

Secretary, Dr. S. J. Walkley, 185 Northwestern avenue, Milwaukee, Wis. 'Phone, Hanover, 3712.

Treasurer, Lewis Donham, 1422 Lynch avenue, E. St. Louis, Ill.

Advisory Board.

Chairman, Archie A. Bryan, LL.D., 307 Harvard street, St. Joseph, Mo.

Members: Dr. J. F. Roser, 924 Chemical Building, St. Louis, Mo.; Mr. J. J. Rhodes, 2010 "I" street, South Omaha, Neb.; Mr. W. S. Pidcock, P. O. Box 232, St. Yd. Sta., Denver, Colo.; Mr. John H. McClure, rooms 235-237 Federal Building, Cleveland, O.

Organization Committee.

Eastern District, Mr. C. O. Hawkins, chairman, 621 West 54th place, Chicago, Ill.

Southern District, Dr. G. M. Predmore, rooms 211-213 Federal Building, Atlanta, Ga.

Western District, John H. Stratton, Jr., room 339, Ry. Ex. Bldg., Denver, Colo.

Northern District—Troy H. Baker, 504 East Water street, Austin, Minn.

Editor of the official organ, *The Inspector*, Mr. Frank Chaney, 2802 Duncan street, St. Joseph, Mo.

HORSE SHOW AT MADISON SQUARE GARDEN, NEW YORK, will be held this year December 7 to 11, instead of in November as heretofore. As the proceeds are to go to the suffering women, children and soldiers of Europe, it is expected that the sale of tickets will be very large.

AN AUTOMATIC COMPRESSED AIR SERUM SYRINGE OF 800 C.C. CAPACITY: The *Reporter*, Lebanon, Indiana, under date of October 3, states that such a syringe has been perfected by Veterinarians Airhart and Morrow, of that locality. We shall probably hear further particulars in regard to it, if it proves a success.

VETERINARIAN SERIOUSLY INJURED BY TRAIN COLLISION WITH AUTOMOBILE: Dr. H. C. Johnson, of Blanchard, Iowa, had his auto struck by a train, throwing him out on his head, says the *Gazette*, of Coin, Iowa, under date of October 2, and he still remained in a serious condition at the time, but getting along as well as could be expected.

J. S. GILL NAMED DEPUTY STATE VETERINARIAN—Clarks-ville, Tenn., September 30.—Dr. J. S. Gill of this city received notice Tuesday from Dr. George R. White of his appointment to the position of Deputy State Veterinarian. This is regarded as a worthy appointment, as Dr. Gill ranks high in his profession and is also an estimable gentleman.—Nashville (Tenn.) *Banner*.

WHEN A MAN CEASES TO BE A GENTLEMAN—A well-known race horse owner said to a veterinary surgeon: "How is it you haven't called on me for your account?"

"Oh," said the vet., "I never ask a gentleman for money."

"Indeed! Then how'd you get on if he don't pay?"

"Why, after a certain time I conclude he's not a gentleman, and then I ask him."—*Spirit of the West*.

APPOINTED ASSISTANT STATE VETERINARIAN—CANNOT GET ALONG WITHOUT THE REVIEW: Dr. Willis A. Myers writes: "I have received notice of an appointment as assistant state veterinarian of Illinois as the result of a civil service examination held recently. I do not see how I could get along without the REVIEW, and trust you will notify me promptly when subscription expires, so that I may renew without loss of an issue."

DR. KRON BECOMES A BENEDICT—Dr. Oscar I. Kron, of San Francisco, California, a graduate of the New York-American Veterinary College, was married in New York City, October 15, 1914, to Miss Augusta Alva Fischer, of that city. The editor's personal acquaintance with Dr. Kron gives us more than an ordinary interest in his welfare, and the news of his marriage is indeed pleasant. We wish him great happiness.

AN ACTIVE CANADIAN VETERINARY ORGANIZATION.—The British Columbia Veterinary Association, with a membership of sixty earnest veterinarians, is accomplishing an immense amount of good for the profession and general public in that section of Canada. At its recent meeting on October 1st, it expressed its loyalty to its nation by donating \$250 to the general war relief fund.

ANOTHER VETERINARY MEDICAL ASSOCIATION: Nothing marks veterinary progress in a community like organization; and for that reason the REVIEW always takes great pleasure in announcing the birth of a new association. This last one was organized at the home of Dr. R. A. Greenwood, at Paineville, Ohio, on October 7, and is called THE ASHTABULA, LAKE AND GEAUGA COUNTIES VETERINARY MEDICAL ASSOCIATION. Veterinarians present were Dr. L. J. Allen, Geneva; Dr. T. L. Laughlin, Chardon; Dr. F. L. McCollister, Willoughby, and Dr. R. A. Greenwood, Paineville. Dr. McCollister was elected president, and Dr. Greenwood secretary and treasurer. We shall take great pleasure in giving publicity to the proceedings of the subsequent meetings of this organization, and wish them success in their efforts in behalf of the profession in their community.

TO ESTABLISH UNIFORM SHIPPING RULES IN MIDDLE AND WESTERN STATES: The *Omaha News* of October 6 states that veterinarians from a dozen states would meet in Omaha on October 29 to establish uniform shipping rules for live stock.

DR. SMEAD GOES TO ROCHESTER.—Dr. Morgan J. Smead, Port Huron, Michigan, has gone to Rochester, that State, to the Biological Farm of Parke, Davis and Co., poetically styled, Parkdale Farm.

SOUR SKIM MILK FOR CALVES.*

That in summer time calves do as well on sour skim milk as they do on sweet will be interesting news to many farmers who have hitherto been kept from raising calves by the expense of keeping the milk sweet in hot weather. This expense, experiments carried out by the Department indicate to be quite unnecessary. The calves will make as rapid gains on sour skim milk. In winter, it is true, this is not quite so satisfactory. It chills the calves, and some of them drink it with great reluctance. Very young calves have even been known to refuse it altogether. On the other hand, of course, it is much easier to keep the milk sweet in winter.

In calling the attention of farmers to these facts, however, the Department at the same time emphasizes an important precaution. Unless the milk is produced and kept under cleanly conditions, it may become contaminated with disease-producing bacteria. Farmers should therefore allow the milk to sour quickly and then feed it without delay.

In the course of these experiments sour skim milk was fed to 22 calves, Holsteins, Jerseys and Guernseys, at different seasons of the year. In no case did it cause digestive disturbances even when the change from sweet to sour milk was made abruptly when the calves were only a few days old. Moreover, no evil results followed the alternate use of sweet and sour. It seems, therefore, that the common idea that sour milk leads to scours is quite unfounded.

The calves, it was found, did not like the sour milk as well as the sweet, but in the majority of cases soon became accustomed to it. The aversion, however, increased when the milk was fed them at a low temperature.

* Office of Information, U. S. Dept. of Agriculture.

VETERINARY HOSPITAL ECONOMIC FACTOR IN COMMUNITY.*

Probably the majority of people do not appreciate the important part the Veterinary Hospital at the college is filling in the community surrounding Ames. The following letter, which was sent out this summer, indicates in a small way what the hospital is doing for those who patronize it:

To the Patrons of the Veterinary Hospital, Iowa State College:

It may interest the patrons of the daily free clinic at the Veterinary Hospital to know that they are helping to supply one of the best and most varied clinics which is presented at any veterinary school in America. Last year there were 1,204 cases treated during the nine months of the school year. Of these there were 595 horses, 16 mules, 164 cattle, 280 hogs, 94 dogs, 24 chickens, 27 sheep, 2 geese, 1 cat and 1 canary.

The faculty of the Veterinary College wish, in this letter, to express their appreciation of such a splendid patronage as well as to say something regarding its plans for the future. The hospital is maintained for the purpose of giving actual instruction to the students in the care of actual cases, and with this in mind no animal is operated upon and no medicine is administered except by and under the supervision of the clinicians in charge. The clinical work is in no way experimental, as the object is to show the students the best methods of treatment. Any experimentation would therefore defeat our own purpose.

In the past, the hospital has not been completely self sustaining, although it is only fair that it should be. This is a state institution, but all the people of the state do not have the privilege of using the hospital; therefore, those who do have these privileges should meet its expenses. Heretofore, there has been no charge made for the treatment of those cases which did not remain at the hospital, although there has always been some expense. During the year, therefore, there will be no change made in the charges upon cases remaining at the hospital, but a minimum fee of twenty-five cents will be charged against those cases which are treated, but do not remain. This should mean very little to each owner, but during the year it will help the hospital fund quite materially.

Our school year opens September 14th. The clinic will be held daily between the hours of one and three p. m. If you are in need of our services, we promise our best efforts in serving you.

Yours very truly,

THE CLINIC STAFF.

* *The Alumnus*, Iowa State College.

FEDERAL QUARANTINE FOR ILLINOIS CATTLE.*

All cattle in five counties in northeastern Illinois will be under a Federal quarantine for bovine tuberculosis after October 1, 1914. The Governor and the sanitary officials of Illinois will co-operate actively with the Federal authorities in making this quarantine effective. The five counties affected are Lake, McHenry, Kane, DuPage and Cook.

Under the terms of this quarantine no cattle can be shipped from the five counties for dairy or breeding purposes unless they are accompanied by a certificate showing that they have been subjected to the tuberculin test and found free from disease. These certificates must be issued by an employee of the Bureau of Animal Industry, United States Department of Agriculture.

The necessity for this quarantine, which has been recognized by the State authorities, arises from the misuse on the part of a limited number of cattle owners and shippers of the privilege of inspection by private veterinarians. In some cases it has been found that health certificates have been issued for cattle which were obviously diseased. As a result, twelve States now refuse to accept Illinois cattle unless accompanied by a certificate of Federal inspection. In order, therefore, to protect the live stock in Illinois and neighboring States from the danger of tuberculosis infection it has been found advisable to do away altogether with private inspection and to place in the hands of the Department of Agriculture the regulation of the entire interstate movement of cattle from the quarantined area, and in the hands of the State Board of Live Stock Commissioners the regulation of the movement of cattle from the quarantined area to other parts of the State. With rigid Federal inspection healthy Illinois cattle will be freed from any suspicion cast upon them by the practices of the small percentage of cattle men who have misused the privilege of private inspection in the past.

The regulations governing the quarantine are contained in a Department order known as B. A. I. Order 217. Under these regulations ample provision is made for the movement under permits from the quarantined area of cattle for feeding or grazing purposes. Cattle intended for immediate slaughter may also be shipped, provided that the cars containing them are properly placarded so as to prevent the animals from being diverted to other purposes. The meat of such cattle is of course subjected to examination by United States meat inspectors. With these pro-

* Office of Information, U. S. Dept. of Agriculture.

visions it is not anticipated that the quarantine will cause any hardship to reputable owners or shippers. It is hoped indeed that these will co-operate in every way with the Department of Agriculture and the State of Illinois, both in enforcing the quarantine and in eliminating bovine tuberculosis from this region.

IMPORTED DRAFT HORSES NO LONGER NECESSARY.*

Enough Pure Stock of the Best Breeds Already in This Country.

WASHINGTON, D. C.—With the exception of a very limited number from England, importation into the United States of pure bred draft horses for breeding purposes has been practically stopped by the outbreak of the European war. For several years previous, from 2,500 to 4,000 stallions and mares have been brought annually into this country. In the opinion of experts in the United States Department of Agriculture, however, the standard of draft horses in America will not suffer from the interruption of these importations. There is, it is said, a sufficiently large amount of pure blood already in the country to answer all requirements and the American draft horse will now have an opportunity to demonstrate its own qualities. Hitherto a certain fascination has hung over the word "imported" which has had a marked effect upon prices. For example, an imported Percheron stallion might sell for \$2,000 where an equally well-bred American Percheron would bring only \$1,200 to \$1,500.

We no longer go to England and Scotland for Shorthorn, Hereford and Aberdeen-Angus cattle, except to a very limited extent. The breeders of these breeds in America have and are producing the equal if not the superior of the English cattle.

There is no apparent reason why the same thing should not take place in the case of draft horses. The principal breeds of these are now thoroughly established in the United States. Their various characteristics and merits are discussed in a new bulletin published by the United States Department of Agriculture under the title of Farmers' Bulletin No. 619, "Breeds of Draft Horses." This bulletin deals with the Belgian, Percheron, French Draft, Clydesdale, Shire and Suffolk types.

Of these the Percheron probably outnumbers, in this country, all other breeds combined. Grade Percherons, the product of pure bred stallions crossed with ordinary mares, have proved very popular on our markets. Of late years the Belgian has also made great strides, but this breed is still comparatively new in

* Office of Information, U. S. Dept. of Agriculture.

America. It is found chiefly in the Middle West, where the heaviest types of draft horses are prevalent. During the past ten years approximately 100 Clydesdales have been imported each year. This type is particularly well liked by those who want style and action, and in consequence is used to a great extent in cities. The Shires, though similar to the Clydesdales, are massive and less active. They are popular on the Pacific Coast and in the Central West.

England now permits the exportation for breeding purposes of Clydesdales and Shires, but it is not likely that under present conditions the importation of these breeds will be carried on to any considerable extent. As has already been said, however, experts in the Department believe that importations are no longer necessary. The bulletin describing, with illustrations, the breeds already introduced will be sent free on application to the Department as long as the supply lasts.

PROPOSED HARRISON ANTI-NARCOTIC LAW.

The *Congressional Record* received on this date shows that the Harrison Bill conferees submitted a unanimous report to the United States Senate on Saturday, October 17th, which report was immediately agreed to without a single comment on the part of the Senate.

We anticipate that the House will concur either to-day or to-morrow, so that before the present week has passed the Harrison law will be a reality.

So far as the medical profession is concerned the Conferees have written into the Harrison bill a provision to the effect that the medical practitioner shall "keep a record of all such drugs dispensed or distributed, showing the amount dispensed, the date and the name and address of the patient to whom such drugs are dispensed or distributed, *except such as may be dispensed or distributed to a patient upon whom such physician, dentist or veterinary surgeon shall personally attend*; and such record shall be kept for a period of two years from the date of dispensing or distributing such drugs, subject to inspection, as provided in this Act."

This amendment should prove entirely satisfactory to the medical profession for two reasons: First, it does not interfere with or curtail to the slightest degree the ability to dispense. Second, it does not lay an unreasonable or oppressive burden upon the medical practitioner in dispensing. The medical practitioner is only required to keep a record of the drugs dispensed

or distributed when he does not personally attend upon the patient.

The latitude of the words "personally attend" will probably be determined at some future date in the courts. The question is, whether a physician is "personally attending" upon his patient when, after having personally and physically attended upon the patient, at some subsequent period, and in the due and proper course of practice he may send the medicine by messenger or otherwise?

The conservative construction of this provision would be that a record be kept of all dispensing or distributing when the physician is not personally and physically attending the patient. Whatever may be the construction of these provisions, the fact remains that they are entirely satisfactory to the medical profession.

When this law has been finally enacted we will advise members exactly what acts must be done both by the manufacturers, the dealers and the medical practitioner to conform thereto.

A further amendment recommended by the conferees and adopted by the Senate, exempts from the provisions of this proposed law preparations and remedies containing not more than $\frac{1}{8}$ of a grain of heroin, instead of $\frac{1}{4}$ of a grain of heroin, as formerly provided.

It is a matter of congratulation to Congress, and the country at large, that this important law will soon be placed upon the statute books. No more important legislation affecting the medical and pharmaceutical professions has been proposed by Congress than the Harrison bill.—(*American Association of Pharmaceutical Chemists.*)

GOOD RESULTS FROM ANTI-HOG CHOLERA SERUM.*

Treatment Given by Demonstration Agents in the South Cutting Down the Loss from This Disease.

Washington, D. C. The treatment of hogs exposed to the risk of contagion from hog cholera with anti-hog cholera serum has saved all but 2.27 per cent. in the southern states, according to reports received by the U. S. Department of Agriculture from local agents engaged in demonstration work in this section.

These reports show that the county agents inoculated, in the year ending June 30, 1914, a total of 34,636 hogs that were in good health at the time, but were exposed to the disease. Of

* Office of Information, U. S. Dept. of Agriculture.

this number only 787 died. This loss of 2.27 per cent. is regarded as highly gratifying evidence of the value of the preventive treatment with anti-hog cholera serum.

Although many authorities do not recommend this treatment after the hog is so sick that signs of the disease are plainly visible, the agents in many cases took a "fighting chance." The results would seem, on the whole, to have been very satisfactory. Including sick and well animals, a grand total of 41,974 hogs exposed to the disease received the serum. Of these, 3,004 died, a percentage of loss of 7.15.

In considering these figures, scientists point out that the work was done under ordinary farm conditions, and not by trained experts in laboratories. In addition, a very large number of hogs were inoculated by veterinarians or by farmers themselves. In these cases no figures are available to show the exact results of the treatment.

Department experts also point out, however, that inoculation alone is not sufficient and does not remove the necessity for sanitary and other precautions; for example, hogs should be fed for a few days after the treatment on cooling laxative foods. They should be removed to uninfected and clean pens where there is plenty of shade, and care should be taken to free them from lice and worms. Since many hogs are worm-infested, the following formula, which has been used by local agents throughout the South with considerable success, is suggested by the Kentucky Experiment Station:

Santonin	2½ grains
Areca nut	1 dram
Calomel	1 grain
Sodium carbonate	1 dram

This is a sufficient quantity for each 100 pounds of live weight. The dose should be given in slop in the evening, after the hogs have been without food for from 12 to 24 hours. The following morning each hog should receive a tablespoonful of Epsom salts.

A MESSAGE FROM PRESIDENT PEARSON.*

Welcome to all who come to help realize the lofty purposes for which Iowa State College is established!

The enrollment continues its rapid increase of recent years to such an extent that friends of the college in Ames have been

* *The Alumnus*, Iowa State College.

anxious lest there might not be suitable accommodations for all comers. But, thanks to the few who have worked long and hard on this problem and to the many who have assisted in every way possible there will be room for all. Scores of houses have been erected during the summer and many others have been enlarged. The new woman's dormitory is due to be finished at an early date. A large and first class cafeteria has been placed in the basement of Alumni Hall. If any one is in trouble in finding room or meals the Y. M. C. A. in Alumni Hall is ready and will be glad to help.

Needed relief is promised to several departments by the new Chemistry building, the Plant Propagation building and the Transportation buildings. The Board of Education has given authority for the plans for new buildings for Animal Husbandry and Science and Hospital.

But buildings and equipment do not make a college. Without the many men and women who are now gathering for a year of hard work, buildings are as empty shells. With these earnest people our buildings are a college in the largest and best sense.

The Ames Spirit includes good fellowship and when I voice these words of welcome I feel that I am speaking for each one in our community to each other one. We welcome old and new members of the faculty. They are to uphold our best traditions in teaching and in research. We welcome the old students, many of whom are already looking forward to the day when they will be called upon to use in the world's work the knowledge they are to secure here, this year.

Last, but not least, we welcome the new students and what appears to be another record-breaking freshman class, the members of which, like those who have preceded them, come from hundreds of the best homes in the states—homes where high ideals prevail and where sham and fraud are despised. The new students are entitled to more attention than others because they are now a great body of strangers. What finer welcome could they ask than that extended by the sophomore class? Nineteen hundred seventeen has put into action the thoughts of good will which everyone feels toward 1918. This new and unique attitude of sophomores toward freshmen originated at Ames a year ago and has attracted widespread notice and most favorable comment throughout the United States.

If any one is in trouble, or discouraged, he or she should remember that many persons are here who wish to help, particularly

the faculty advisors, sophomore reception committee, the secretaries of the Y. M. C. A. and Y. W. C. A. and the advisor of women. The offices of the Deans and the President are open to all.

Welcome, thrice welcome, to Iowa State College at the beginning of this new college year, and let us try to make it the best year thus far in the life of each of us.

R. A. PEARSON,
President.

GOVERNMENT SUPERVISION OVER IMPORTATIONS OF LIVE STOCK.*

In case you are a breeder of live stock and desire to import a number of animals for breeding purposes or possibly a pure-bred bull, boar or ram for the improvement of your herd or flock, it will be well to know that the Federal Government maintains a strict supervision over the entry of such animals into this country. The same close scrutiny is exercised over deer, goats or other pet animals, which foreign travelers sometimes wish to bring home as pets or as mementos of their travels.

In either case it will be advisable to defer making a purchase or engaging space for the animals on a steamship until you have ascertained just what requirements govern importations of such animals.

By Act of Congress, the Secretary of Agriculture is given authority to make such regulations and take such measures as he may deem proper to prevent the introduction or dissemination of any contagious, infectious or communicable disease of animals from a foreign country into the United States.

Under such authority, regulations of the Department of Agriculture require that any person contemplating the importation of cattle, sheep and other ruminants, and swine, from any part of the world except North America, must first obtain from the Secretary of Agriculture two permits. One of these permits, upon presentation to the American Consul at the port of shipment, will entitle the specified animals to a clearance; the other will assure, subject to inspection, their reception and entry subject to observation in quarantine at the port of entry on the date pre-

* Office of Information, U. S. Dept. of Agriculture.

scribed for their arrival or at any time during three weeks immediately following. This leeway allows for any unavoidable delay, through bad weather or other cause, in the steamer's schedule.

Three animal quarantine stations are provided on the Atlantic seaboard near the ports of Boston, New York and Baltimore for the detention of imported stock. The animals included in this regulation are cattle, sheep, goats and other ruminants, swine and collie, shepherd or sheep dogs. All animals from parts of the world other than North America are subject to this quarantine regulation. If no disease develops while the animals are detained at the quarantine station the owner is permitted to ship them to their ultimate destination in this country.

All animals of the classes named and which are subject to both inspection and quarantine must be entered through these ports.

Cattle from Great Britain, Ireland and the Channel Islands are held in quarantine for a period of thirty days. If from other countries, except those of North America, the quarantine period is ninety days, counting from date of shipment. Sheep and swine from any part of the world, except North America, are subject to a quarantine of 15 days.

The Department of Agriculture receives periodically official reports from various foreign countries concerning conditions as regards existence of certain communicable diseases of live stock. These enable the Secretary of Agriculture to determine countries from which certain animals can not be imported without danger to the live stock of the United States. No permits are granted for importations from such countries. For instance, owing to prevalence of foot-and-mouth disease and other communicable diseases in countries of the Old World and South America, importations of cattle, sheep, other ruminants and swine have for several years been forbidden from countries other than Great Britain and North America. This work is aimed to exclude communicable diseases, a number of which are unknown in this country, any of which, if introduced, would result in great loss to our live stock industry.

Persons interested may obtain the latest regulations (B. A. I. Order 209, effective July 1, 1914); on application to the Chief of the Bureau of Animal Industry, Department of Agriculture, Washington, D. C.

NOTE—This is information that a client is apt to seek from a veterinarian at any time.

VETERINARY MEDICAL ASSOCIATION MEETINGS.

In the accompanying table the data given is reported by many Secretaries as being of great value to their Associations, and it is to be regretted that some neglect to inform us of the dates and places of their meetings.

Secretaries are earnestly requested to see that their organizations are properly included in the following list :

Name of Organization.	Date of Next Meeting.	Place of Meeting.	Name and Address Secretary.
Alabama Veterinary Med. Ass'n.	Mar. 5-6-7, 1914	Auburn.	C. A. Cary, Auburn.
Alumni Ass'n, N. Y.-A. V. C.	June 10, 1915.	141 W. 54th St.	P. K. Nichols, Port Richmond, N. Y.
American V. M. Ass'n.	Dec., 28-31, 1914	New Orleans, La	Nelsen S. Mayo, 4753 Ravenswood Ave., Chicago, Ill.
Arkansas Veterinary Ass'n.	January 5-6, 1915	Little Rock.	R. M. Gow, Fayetteville.
Ass'n Médéciale Veterinaire Française.	1st and 3d Thur. of each month.	Leec. Room, La-val Un'y, Mon.	J. P. A. Houde, Montreal.
"Laval"	2d Fri. each month.	Chicago.	H. A. Smith, Chicago, Ill.
B. A. I. Vet. In. A., Chicago.	3d Mon. each month.	S. Omaha, Neb.	E. J. Jackson, So. Omaha.
B. A. I. Vet. In. A., So. Omaha.	Monthly.	St. Joseph.	F. W. Caldwell, St. Joseph, Mo.
Buchanan Co. Vet. Ass'n.	December 10, 1913.	San Francisco.	John F. McKenna, Fresno.
California State V. M. Ass'n.	Feb. and July.	Ottawa.	A. E. James, Ottawa.
Central Canada V. Ass'n.	June and Nov.	Syracuse.	W. B. Switzer, Oswego.
Central N. Y. Vet. Med. Ass'n.	2d Tues. each month.	Chicago.	D. M. Campbell, Chicago.
Chicago Veterinary Society.	January, 1914.	Denver.	I. E. Newsom, Ft. Collins.
Colorado State V. M. Ass'n.	1st Tues., Feb., 1915.	Hartford.	B. K. Dow, Williamantic.
Connecticut V. M. Ass'n.	Jan., Apl., July, Oct.	Wilmington.	A. S. Houchin, Newark, Del.
Delaware State Vet. Society.	3d Mon. each month.	Newark, N. J.	J. F. Carey, East Orange, N. J.
Esex Co. (N. J.) V. M. A.	2d week, July, 1913.	Rochester.	J. H. Taylor, Henrietta.
Genesee Valley V. M. Ass'n.	Dec. 22-23, 1913.	Atlanta.	P. F. Bahnsen, Americus.
Georgia State V. M. A.	Nov. 20, 1914.	E. St. Louis.	Louis P. Cook, Cincinnati.
Hamilton Co. (Ohio) V. A.	Dec. 3-4-5, 1914.	Chicago.	L. B. Michael, Collinsville, Ill.
Illmo Vet. Med. Ass'n.	Jan. 14, 1914.	Indianapolis.	L. A. Merillat, Chicago.
Illinois State V. M. Ass'n.	Dec. 9-10-11, 1914.	Cedar Rapids.	A. F. Nelson, Indianapolis.
Indiana Veterinary Association.	Jan. 6-7-8, 1914.	Manhattan.	C. H. Stange, Ames.
Iowa Veterinary Ass'n.	Oct. & Feb. each year.	Lexington.	J. H. Burt, Manhattan.
Kansas State V. M. Ass'n.	2d Tues. each month.	Philadelphia.	Robert Graham, Lexington.
Kentucky V. M. Ass'n.	Pending.		Chester M. Hoskins.
Keystone V. M. Ass'n.	Sept., 1914.	Lake Charles.	Phil. H. Fulstow, Norwalk, Ohio.
Lake Erie V. M. Association.	Jan. 27, 1915.	Augusta.	Hamlet Moore, New Orleans, La.
Louisiana State V. M. Ass'n.	4th Wed. each month.	Baltimore.	H. B. Wescott, Portland.
Maine Vet. Med. Ass'n.	Feb. 3, 4, 1914.	Young's, Boston.	H. H. Counselman, Sec'y.
Massachusetts Vet. Ass'n.	July 8-9, 1914.	Lansing.	W. T. Pugh, Southbridge.
Michigan State V. M. Ass'n.	1914.	Northfield.	W. A. Ewalt, Mt. Clemens.
Minnesota State V. M. Ass'n.	Jan. 27, 28, 29, 1914	Vicksburg.	G. Ed. Leech, Winona.
Mississippi State V. M. Ass'n.	Semi-Annually.	Kansas City, Mo.	J. D. Townsend, Louisville.
Missouri Valley V. Ass'n.	July, 1915.	Galesburg, Ill.	Hal. C. Simpson, Denison, Ia.
Missouri Valley V. M. Ass'n.	Sept. 24, 25, 1913.	St. Louis.	G. E. McIntyre, Alexis, Ill.
Missouri Vet. Med. Ass'n.	2d Mon., Aug., 1915.	Helena.	Chas. D. Tolse, Kansas City.
Montana State V. M. A.		New York, N. Y.	A. D. Knowles, Livingston.
Nat'l Ass'n B. A. I. Employees.			S. J. Walkley, 185 N. W. Ave., Milwaukee, Wis.
Nebraska V. M. Ass'n.	1st Mo. & Tu., Dec. '13	Lincoln, Neb.	Carl J. Norden, Nebraska City.
New York S. V. M. Soc'y.	1915.	Ithaca.	H. J. Milks, Ithaca, N. Y.
North Carolina V. M. Ass'n.	June 23, 1914.	Wilson.	J. P. Spoon, Burlington.
North Dakota V. M. Ass'n.	Week of July 20, 1914	Fargo.	A. F. Schalk, Agricultural College.
North-Western Ohio V. M. A.	Nov. 1913.	Delphos.	E. V. Hover, Delphos.
Ohio State V. M. Ass'n.	Jan. 6-7, 1915.	Columbus.	Reuben Hilty, Toledo.
Ohio Soc. of Comparative Med.	Annually.	Upper Sandusky.	F. F. Sheets, Van Wert, Ohio.
Ohio Valley Vet. Med. Ass'n.	Fall, 1913.	Oklahoma City.	J. C. Howard, Sullivan.
Oklahoma V. M. Ass'n.	1st Week in Feb. 1914	Toronto.	C. E. Steel, Oklahoma City.
Ontario Vet. Ass'n.	March, 1915.	Harrisburg.	L. A. Willson, Toronto.
Pennsylvania State V. M. A.	Call of President.	Manila.	John Reichel, Glenoiden.
Philippine V. M. A.	4th Tues. each month.	Portland, Ore.	David C. Kretzer, Manila.
Portland Vet. Med. Ass'n.	Mon. and Que.	Providence.	Sam. B. Foster, Portland, Ore.
Province of Quebec V. M. A.	Pending.		Gustave Boyer, Rigaud, P. Q.
Rhode Island V. M. Ass'n.	Aug. 4-5-6, 1914.	Salem.	J. S. Pollard, Providence.
South Carolina Ass'n of Veter ns.	1st Wed. fol. the 2d	St. Louis.	B. K. McInnes, Charleston.
South Illinois V. M. and Surg. Ass'n.	Sun. each month.	Reading.	F. Hockman, Iola.
St. Louis Soc. of Vet. Inspectors.	Dec. 16, 1914.	Philadelphia.	Wm. T. Conway, St. Louis, Mo.
Schuylkill Valley V. M. A.	Pending.	Madison.	W. G. Huyett, Wernersville.
Soc. Vet. Alumni Univ. Penn.	Jan. Apl., July, Oct.	Los Angeles.	B. T. Woodward, Wash'n, D. C.
South Dakota V. M. A.	4th Tues. each month.	407 Illinois Ave.	S. W. Allen, Watertown.
Southern Aux. of Cal. S. V. M. Ass'n.	November, 1914.	Nashville.	J. A. Dell, Los Angeles.
South St. Joseph Ass'n of Vet. Insp.	Nov., 1913.	College Station.	H. R. Collins, South St. Joseph.
Tennessee Vet. Med. Ass'n.	2d Thu. each month.	St. P.-Minneap.	O. L. McMahon, Columbia.
Texas V. M. Ass'n.	Spring of 1914.	Salt Lake City.	Allen J. Foster, Marshall.
Twin City V. M. Ass'n.			M. H. Reynolds, St. Paul, Minn.
Utah Vet. Med. Ass'n.			E. J. Coburn, Brigham City.
Vermont Vet. Med. Ass'n.			G. T. Stevenson, Burlington.
Veterinary Practitioners' Club.			C. H. H. Sweetapple, For. Saskatchewan, Alta., Can.
Virginia State V. M. Ass'n.			M. Page Smith, Washington, D. C.
Washington State Col. V. M. A.			J. M. Cashell, 2115 14th Street.
Washington State V. M. A.			Wm. Hilton, Winnipeg.
Western N. Y. V. M. A.			E. L. Loblein, New Brunswick.
Western Penn. V. M. Ass'n.			R. S. MacKellar, N. Y. City.
Wisconsin Soc. Vet. Grad.			T. F. O'Dea, Union Hill, N. J.
York Co. (Pa.) V. M. A.			Geo. C. Faville, North Emporia.
			R. J. Donohue, Pullman.
			Carl Cozitz, Bellingham.
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Rejected manuscripts will not be returned unless postage is forwarded.

Subscribers are earnestly requested to notify the Business Manager immediately upon changing their address. Make all checks or P. O. orders payable to American Veterinary Review.

EXCELLENT POSITION OPEN IN HEALTH WORK is the most interesting caption of an advertisement on the opposite page. This is a nice position for an earnest, capable veterinarian fond of laboratory work, and will require prompt inquiry to secure it.

THE COACH TEAM advertised on opposite page is no doubt what many veterinarians have diligently searched for in vain in the present depleted condition of the coach-horse markets, and they will be glad to find this pair, guaranteed by a veterinarian to be absolutely sound, in addition to their other excellent qualities.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, ETC., OF THE AMERICAN VETERINARY REVIEW, PUBLISHED MONTHLY AT 509 WEST 152D STREET, NEW YORK, N. Y., REQUIRED BY THE ACT OF AUGUST 24, 1912.

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ROBT. W. ELLIS, Bus. Mgr.

Sworn to and subscribed before me this 1st day of October, 1914.

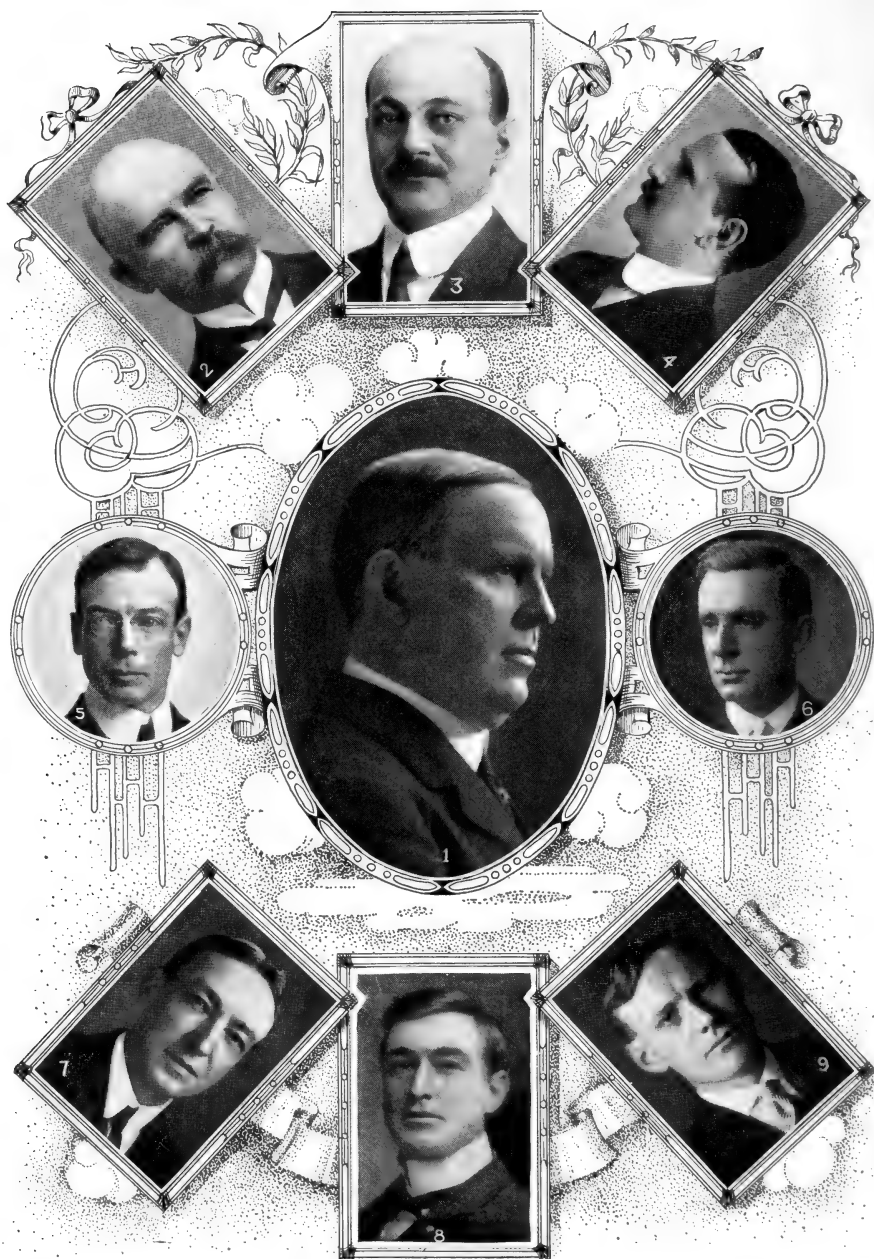
MOSES MORRIS, Notary Public,

(Seal.)

New York County, No. 133, New York Register No. 4049.
(My commission expires March 30, 1916.)

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AMERICAN VETERINARY REVIEW.

DECEMBER, 1914.

EDITORIAL.

EUROPEAN CHRONICLE.

BOIS JEROME, October 15, 1914.

DISEASE OF AUJESZKY.—“The name of Infectious Bulbar Paralysis proposed by Marek, and which has become classical since the publication of the treatise of *Special Pathology* of Hutyra and Marek, is not perfect. The physico-pathological study of the disease shows that the troubles do not proceed only from the bulbar paralysis; that name besides tends to confusion with true bulbar paralysis observed in animals, principally the horse. The expression of pseudo-rabies will not be perfect either, notwithstanding some common signs; there exist between rabies and the *Disease of Aujeszky* great differences, which scarcely justify the idea of close relationship. To describe the disease, under the name of *Disease of Aujeszky*, is besides paying a deserved honor to the one who made it known, and is the adoption of a more simple solution, common in medical literature, although it gives no indication as to the characters of the disease.”

Such is a footnote written by Professor L. Panisset in the excellent review he has written in the *Revue Generale* on infectious, *bulbar paralysis*, *pseudo-rabies*, or *disease of Aujeszky*, from which I make the following extract:

In 1902, Aujeszky, of Budapest, wrote on a new infectious disease of domestic animals, which is described as infectious bulbar paralysis, or pseudo-rabies.

It is an acute disease, generally fatal, whose agent is still unknown and which is characterized by nervous troubles of bulbar origin.

First mentioned and described in Hungaria by Aujeszky, who observed it in horses and in dogs, it was followed two years after by Kern in an outbreak of a disease, similar in its causes and manifestations (rapid evolution, local inflammation, general symptoms, particularly signs of irritation, ending generally in death and whose virus exists principally at the point of infection and in the central nervous system. Marek later mentioned the frequent appearance of the disease in dogs and in cats. It was observed in Hungaria and became the object of experimental studies at the veterinary schools of Hungaria and Germany.

Much data was obtained on the disease, the nature of the virus, its pathogenous action, but many points remain obscure yet.

As to the nature of the disease, up to the present time, the examination of preparations, colored or not, and the attempts with cultures of the products containing the virus, have always remained without results.

Until now the disease has been observed in bovines, cats, dogs, swine, wild boar, foxes and rats. According to St. v. Ratz, man is not entirely refractory to the disease.

Hungaria, Croatia, Russia and Bresil are the countries where the disease has been observed.

* * *

The clinical study of three of our domestic animals is resumed as follows:

I. *Cattle*.—The disease is manifested by an irresistible itching manifested by constant rubbing of the nose, rarely of any other part of the body, and which results in the formation of hairless spots, bleeding, and surrounded with inflammatory, œdematous infiltrations. The animal moans, strikes the ground convulsively with the hind legs. Attempts at examination give rise to increased agitation. There may be salivation with impos-

sible swallowing. The sight of people may promote, in some animals, fright, sweatings, grinding at the jaws. The appetite may last for a certain time, but soon the animal has tympanitis, and death occurs 24 or 36 hours after the apparition of the first symptoms.

2. *Dogs*.—At the onset the animal looks depressed, answers poorly and unwillingly to the master's call, he does not look at his food with avidity. He also often looks towards the region of the body where the virus has entered, repeatedly barking at the same time. If one knocks at the door of his kennel, he is frightened and jumps aside. The physiognomy has a fearful and painful expression. The exaggeration of the reflexes is accompanied with the sensitiveness and itching of the place of inoculation. Left at liberty, the dog is seen biting objects close by and trying to tear them. Yet he is never aggressive to man, although he bites his companions. He rolls himself in his kennel or on the ground, jumps at the wall, especially when he cannot reach the inoculated region. Abundant salivation is often observed, breathing is loud and difficult.

The temperature rarely goes above 39.5 degrees C.; towards the end of the disease it is most generally below normal. The appetite is diminished, thirst always very great, and even during the stage of agony the dog drinks with avidity.

The inoculated region is the seat of such itching that the animal scratches himself continuously until he reaches the superficial muscles which he then tears with his teeth. Towards the end of the disease, when exhaustion is complete, he still tries to reach and scratches the spot at the seat of the itching. Agony is rapid, but may also last several hours.

3. *Cats*.—The symptoms appear suddenly. In perfect health, the animal a few hours after, presents morbid, serious troubles.

He is quiet, lying crouched in a corner or now and then rises to look for a more quiet place. He moans and at times gives a plaintive cry. Saliva flows abundantly from his mouth. There is complete anorexia, soon accompanied with pharyngeal

paralysis. Swallowing is impossible. In about half of the cases there is a marked itching about the region of the head, ordinarily only on one side. Under this influence the animal scratches with his paws, rubs against surrounding objects, kicks at or bites the itching regions, which are soon hairless or raw. The pupils are of unequal size, and there is a diminution in the reflexes. There is generally hyperesthesia and a diminution of the tendinous and cutaneous reflexes. In many cases there are spasmodic contractions of the flexor muscles of the head and neck and of the depressors of the lower jaws. Respiration is labored. There is never any tendency to bite in animals infected naturally, but it may be observed in those subjects of experiments. A sick animal may bite its kennel's companions. Death occurs 24 to 36 hours after the first signs of the disease.

* * *

The lesions are neither important nor characteristic. Congestion, hemorrhages, inflammation and often necrosis at the point of inoculation. There may be also congestion and small hemorrhage in viscera or the nervous centers. The diagnosis is easy when the typical disease can be followed from the beginning to the end. It is difficult when the symptoms are not well marked and if the itching is missing. Paralysis is specially accusative, but dogs are the animals where the symptoms are most marked. Death occurs often by apoplexy and the disease is then most difficult to be diagnosed.

Atypical forms may be confounded with rabies, especially when excitement is well marked.

In dogs the characteristic physiognomy of rabies is missing. He is aggressive only to dogs, never to man. The paralysis of the jaws of rabies is not present. Yet, towards the end of the disease, dogs will bite objects that are introduced in their mouth.

In cats the differential diagnosis between rabies and infectious bulbar paralysis is still easier. Rabid cats always are aggressive, except when they have paralytic rabies. Those that are

paralyzed with the disease of Aujeszky can be taken from their cage without any danger.

In horses the predominance of the signs of excitement renders the differential diagnosis with rabies more difficult. The apparition of the spasmodic contractions, the falling to the ground, the long duration of the disease suggest the paralysis.

The itching may occur in rabies. Inoculations will be necessary to insure the differentiation.

Condition of the urine and absence of irritability will define the nature of the paralysis of hemoglobinuria.

Progressive paralysis, some of which are described under the name of bulbar paralysis, affect only some nerves of the head, their duration varies and they terminate by recovery if no complication sets in.

The epizootic cerebro-spinal meningitis, by its peculiar symptoms, is well characterized.

The distinction with the acute diseases of the brain and its meninges or with the troubles due to parasites is insured by the absence of the itching.

Post mortem does not reveal the nature of the disease, nor to differentiate it from rabies, and often inoculations are to be made on rabbits, under the skin, in the eye, or in the brain, either with nervous substance or with blood.

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ETIOLOGY—EXPERIMENTAL STUDY.—The subcutaneous tissue of the place of entrance is especially virulent, then the blood, and after the central nervous system. The peripheric nerves contain no virus. Neither do the liver, kidneys, spleen, excreta. In some cases the urine has proved to be infected. Inoculations of bile, crystalline lens and saliva are without results. The virus passes in the foetus. The serum of the blood is virulent, but loses its properties when diluted over 1 per cent.

Receptivity.—Rabbits are easily infected. Guinea pigs also. Grey mice are more susceptible than white. Dogs and cats are among the domestic animals the most susceptible to it. Cattle and

sheep have the same condition of receptivity. Solipeds are more resisting, horses more so than donkeys. Pigs, pigeons and fowls are refractory. Goats can be infected. Sheep are sensitive to subcutaneous inoculation.

Contagion.—The disease is not transmissible by contact of sick with healthy animals. Infection of a solution of a continuity of the teguments has to take place. Experiments have failed to show that insects and especially fleas could carry the disease. Rats are probably the principal agents in bovines, as by their bites, when they are themselves diseased on their nose, they can inoculate it.

Mode of Entrance.—Providing there is a solution of continuity of the skin, subcutaneous inoculation is certain by the deposit of virus upon it. Introduced in the conjunctival cul-de-sac, in the nasal cavities and in the rectum, give no result. Food containing virulent products will transmit the disease. Subdural inoculation reproduces the disease with the shortest incubative period. Intraocular, peritoneal, muscular or venous inoculation is always successful.

Pathogeny.—Remains yet uncertain. For some the virus is transported by the lymphatics and again for others by the nerves. It does not appear to produce toxins.

Treatment.—All attempts have failed.

Immunity.—To this day all experiments made in that direction have been fruitless.

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BOVINE ANAPLASMOSIS.—Professor Lignieres, the learned director of the National Institute of Bacteriology at Buenos-Ayres, has published in the *Centralblatt für Bacterio, Parasit, und Infectionske.* a long article whose extract I find in the *Presse Medicale*.

The work done by the author and its importance in showing that Tristeza of bovines in South America, being due to Protozoars the Piroplasmosis, is well known. The article which he presents now refers to another protozoar infection, the *Anaplasmosis*.

This affection exists in the Argentines, in an endemic form, in some regions of the north, where it can be introduced accidentally from other regions by infected bovines, true reservoirs of virus.

It is due to an hematozoar: *Anaplasma Argentinum*, of the same type as *Anaplasma marginalis* of Theiler, to which it cannot yet be identified.

In nature, anaplasmosis does not present itself in a pure state; it is associated with piroplasmosis by *P. Bigeminium* and *P. argentinum*. It seems that it is transmitted by the same tick: *Margaropus Microptus*. Contagion by Stomaxes does not occur.

To know well anaplasmosis, the parasite must be isolated, the disease be studied without any association and establish the differential characters between anaplasma and piroplasma. Then it is easier to understand the various modalities that anaplasmosis can assume when it is associated with piroplasmosis.

Inoculations of anaplasmosis to bovines is equally well made by subcutaneous, intravenous or intramuscular injections. The period of incubation is longer than for piroplasmosis and the march of the disease is also more regular.

Anaplasma will be readily found in the blood of the general circulation, especially during the final crisis, that is, when the symptoms of the disease and the hyperthermy are observed. The parasites colored very well and uniformly, as chromatine, by the Laveran or the Giemsa; they are quite perfectly round, homogenous, of various size and situated more on the periphery. One, two or three are found in the same corpuscles; some are free in the protoplasm. Parasited corpuscles which, at the beginning, are scarcely in the proportion of 1 per cent. may later reach to 30 per cent. and more of the total of the hematies. At the same time the alteration of the blood of acute anhemia is observed.

Pure anaplasmosis is characterized by one or several irregular febrile crises, the most important one, that which decides the prospects of the sick animals, is accompanied with severe symptoms of acute anhemia: loss of appetite, great weakness, rapid loss of flesh, pallor of the mucous membranes, acceleration of the

respiration and of the pulse, hard rusty feces. It is to be noted that notwithstanding the rapidity and importance of the degeneration of the corpuscles the urine never looks red in color. Jaundice is seldom observed.

Autopsy shows a blood extremely light in color, still coagulating; the tissues are pale, rarely yellowish. Muscles have kept their ordinary aspect, the spleen is twice or three times its normal size. Kidneys have their normal appearance, urine may contain albumine and no hemoglobine. Lymphatic glands, digestive canal lungs are not affected. Numerous petechias are frequently seen in the heart.

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Anaplasmosis is a specific disease, a morbid entity well marked and entirely distinct from piroplasmosis. But in the natural anaplasmosis, to the symptoms and lesions of the disease, there are added, in a more or less serious extent, and perhaps preceding them, the symptoms and lesions of piroplasmosis, principally hematoglobinuria and nervous spells.

In the regions where anaplasmosis is endemic, indigenous bovines suffer little from the disease, by opposition, imported stock die in enormous proportion. When they resist, convalescence is long and the disease takes a chronic form.

Anaplasmas can be kept for a very long time, more than a year. They are yet living and virulent in the blood of recovered animals. Immunity is gained after a first attack of anaplasmosis. Anaplasmas do not pass in the blood of the foetus.

Animals vaccinated against *P. bigeminum* and *P. argentinum* remain insusceptible to anaplasmas and *vice versa*. Immunized bovines against anaplasma remain sensitive to piroplasmas.

In blood rich with anaplasmas and cooled off to 20 C., the parasites remain some time living and virulent.

The diagnosis of anaplasmosis to be positive must be only after the study of the blood taken at the algide period of the disease.

The examination of the blood, after coloration to the Giemsa and methylene blue, is most useful. If there are *P. bigeminum*, the classical parasites will be easily detected. If it is *P. argentinum*, the hematozoars are very rare, small in form, rounded, coloring better with methylene blue, or again, in small bigeminated pear form slightly lanceolated.

The prognosis is always very serious. Large, fine adult animals are the most susceptible.

No specific is yet known against anaplasmosis. Tryplanblue is more injurious than beneficial.

As against piroplasmosis, police sanitary measures must be resorted to against anaplasmosis: destruction of the ticks, separation of infected from healthy regions. Immunization will be most beneficial against the disease.

Whatever may be the method of immunization resorted to in neither piroplasmosis as well as in anaplasmosis, it is not doubtful that the successive use of pure virus, advocated by Lignieres must be preferred to that of the blood, whose parasitic qualities are not exactly known.

The immunity conferred by the use of pure virus is very usefully reinforced by the injection of blood from animals from the tick regions spontaneously infected and containing parasites of the same type as those used for vaccination.

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WHAT WE THINK.—This is the heading of a leading article on *Veterinary Education* that has appeared some while ago in that go-ahead English professional paper, the *Veterinary News*.

At the beginning of the subject, the Editor writes, a sentence which is a most wise suggestion to some schools: "There is neither room nor use in a profession such as ours for pessimists, who perpetually argue that what was good enough for their fathers and grandfathers is good enough to-day, or that what meets the requirements of to-day will be equally satisfactory in meeting the exigencies of twenty years hence." But if such ex-

pressions find their application in a few instances, they certainly do not concern the schools of Great Britain.

Indeed, the issue of the *News* is a handsome announcement for British schools, London, Liverpool, Edinburg, Glasgow and the Royal Veterinary College of Ireland.

In the number referred to and for each school there are presented the requirements for matriculation, the length of the course, the division of the curriculum, etc., etc., concluding with the special courses, the post graduate for the Indian civil veterinary department, that for the army, where the officers of the veterinary department rank as Colonel, Lieutenant Colonel, Major, Captain and Lieutenant, as soon (I hope), the veterinarians of the American army will rank.

The various degrees that can be obtained from the British schools are quite numerous, that of B.V.Sc., M.V.Sc., D.V.H., D.V.Sc., M.R.C.V.S. This last, I believe, being the legal licence to practice Veterinary Medicine and Surgery.

The number of the *News* referred to is well illustrated by views of the various schools and also by likenesses of the Principal of each Institution. Veterinarians of America will be pleased to know the learned men, who lead and guide the profession in England.

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ADENO-CUTIREACTION TO TUBERCULINE.—At the *Society for Scientific Studies in Tuberculosis*, there has been presented a paper on the manifestations of the tuberculine reaction upon the lymphatic glands, which has a great importance, in the early diagnosis of tuberculosis, in the cases where cuti-reaction is powerless to discover it.

The author Doctor Germain Blechmann related that he had observed that the cutireaction obtained with brute tuberculine was frequently accompanied with a glandular swelling, more or less marked—of the lymphatic surface, where the scarifications had been made. And a curious fact that he had also observed was a similar glandular reaction in children who were to all ap-

pearance tuberculous and in which the cutireaction had been negative.

Continuing his observations, upon 271 children, out of 59 cases, 51 cutireactions were negative and had no swelling of the lymphatic glands. Of the 8 others which had a positive reaction, 2 presented the adeno-cutireaction.

In another observation, where 212 children were submitted to Von Picquet's reaction, out of 87 which were negative, 14 had a marked adeno-reaction, axillary or inguinal. In the others that were positive, 56 times out of a hundred, the adeno-cutireaction existed.

The specificity of the adeno-cutireaction has also been observed in an 8 months old child, who was treated for progressive broncho-pneumonia, in which the cuti-reaction had been negative in two occasions, although he had shown a marked glandular reaction. Tubercular bacilli were found in the pulmonary lesions.

"This glandular reaction seems," concludes the author, "a valuable help in the diagnosis of early tuberculosis."

A. L.

THE CHRISTMAS SPIRIT AND THE RESPONSE OF THE VETERINARIAN.

Christmas is not so much a day as a period of time, in English custom called Christmastide, when the Christmas spirit kindly leads all men to give tokens of goodwill and friendliness to their fellows. Never at any other time in the year, as in the month of December, is there quite that plenitude of benevolence and openhandedness which so beautifully reveals itself in the gift and in the giving. But the essential pleasures of this happy time come not so much from the gift as from the spirit in which it is given. The act is twice blessed—it blesses him that gives and him that receives. Christmas is the time when men's hearts are open and when they can be reckoned with to respond most readily to generous impulses and to an appeal for help where help is very much needed.

The editor of the REVIEW feels now, as he has always felt, that he can safely rely upon every loyal veterinarian to respond to a call for help given honestly, earnestly, and all the more needed in that the protracted delay in expected results has kept us all on edge. Help is needed for the last step in our work for the passage of the Army Veterinary Service Bill—the vote on it on the floor of the Senate. All the rest is over. There remains simply the vote on the Senate floor. The third and last session of the present 63rd Congress begins December 7 and ends March 4. We did not get the bill passed completely in the session just closed; but in the coming short session, just about to begin, our measure has the same place on the Senate calendar as before. If it is voted on favorably on the Senate floor between December and March it will become a law of the land.

Where is our Christmas spirit, our sense of aiding the needy, if we do not give help where it would be at once seasonable and most acceptable—in finishing this work, so nobly begun, so far continued and approaching an end. You can aid your fellow men in a large way, your profession in a larger way, by giving your hand to bring this work for the much-desired and much-needed reform in the Army Veterinary Service to a successful ending. Seventy-five out of the total of ninety-six United States Senators have informed their constituents in the several states that they are in favor of our measure. If the bill has not passed by Christmas Day, visit your Senator between Christmas and New Year's Day, and tell him how much needed the law is. That is practical helpfulness, and would be a most beautiful manifestation of the Christmas spirit.

A recent letter from Dr. W. Horace Hoskins brings the situation well before us:

DR. HOSKINS' LETTER.

November 6, 1914.

DEAR DOCTOR—This letter will bring to you the knowledge that our Army Veterinary Service bill has gone over until the December session of Congress.

The long period Congress was in session and the approaching elections resulted in an agreement not to take up the calendar, but pass only the appropriation bills and the war revenue measures and then adjourn.

Our bill does not lose its place on the calendar and every assurance has been given that it will pass in the third session of the 63d Congress.

More than seventy-five of the Senators have expressed themselves favorably to the members of the profession in the respective States.

I am writing you now because I want you to try and get in personal touch with your Senators while they sojourn at home during the next six weeks.

I am enclosing you one of our last appeals for service in this struggle for recognition that you may be better able to appeal to them in support of our bill.

Perhaps it might be well for the veterinarians of your district to select some one as a spokesman and lay upon him the task of taking up this matter in a personal way, for the home contact with your Senators is always more potent than through written appeals.

A quiet, patient effort for the next six weeks will insure our victory and remove this last place in our land where our profession has failed to gain just and proper recognition.

With every assurance of our final triumph, I am

Yours very truly,

W. HORACE HOSKINS,
Chairman.

G. S.

THE NEW ORLEANS MEETING.

Everyone in the profession and related to it, has been looking forward to the New Orleans meeting of the A. V. M. A. as something out of the common—so to speak—a meeting in a section of the country suggestive of a foreign land, in a city noted for its romantic picturesqueness, which the REVIEW has tried in its humble way to portray, fully realizing that we were not able to do it justice—it must be seen to be fully appreciated. And so, we have prepared for the trip. We have published in the following pages a picture of the Grunewald, Hotel Headquarters, the rates of which are \$1.00 and upwards for rooms without bath, and \$2.50 and upwards for rooms with bath, European plan, so that members might make their reservations in advance. We have followed this with the contributions to the programme and a schedule of rates over the official route from the east, together with the dates and hour of starting from different points.



THE GRUNEWALD—NEW ORLEANS, LA.

OUTLINE OF PROGRAMME OF A. V. M. A. MEETING AT NEW ORLEANS, DECEMBER 28 TO 31, 1914.

Section on Sanitary Science and Police. (1st Day.)

1. "The Diagnosis of Open Cases of Tuberculosis in Cattle," by D. H. Udall, Ithaca, N. Y.
2. "Studies on Bovine Infectious Abortion," by Ward Giltner and E. T. Hallman, East Lansing, Michigan.
3. "Observations on the Epidemiology of Contagious Abortion in Mares," by Frank W. Schoffield, Provincial Health Laboratories, Toronto, Ontario.
4. "Cardiac Insufficiency at High Altitudes," by I. E. Newsum, Fort Collins, Colorado.

Section on Sanitary Science and Police. (2nd Day.)

1. "A National Institute of Comparative Medicine," by Fred J. Mayer, Opelousas, Louisiana.
2. "The Present Status of Immunization Against Anthrax," by A. Eichhorn, Bureau of Animal Industry, Washington, D. C.
3. "The Diagnosis of Rabies," by C. A. Zell, Abbott Research Laboratories, Chicago, Ill. Discussion by F. P. Machler, M.D., Supt. Iroquois Memorial Hospital.
4. "Hog Cholera Based on Serum Treatment," by George R. White, Nashville, Tenn.

Practice Section in Charge of Dr. L. A. Merillat, Chicago.

- "Osteoporosis," by C. A. Cary.
- "Laws Prohibiting Veterinarians from Dispensing," by H. Jensen.
- "Publicity in the Veterinary Profession," by F. F. Sheets.
- "Calculi of Bovines," by G. B. Jones.
- "Death in Animals Due to Electric Current," by J. F. Winchester.
- "Cottonseed Feeding in Swine," by G. A. Roberts.
- "The Actual Curative Value of Antitetanic Serum," by H. F. Palmer.

"Some Poultry Diseases of Interest to Veterinarians," by B. F. Kaupp.

Symposium on Shipping Fever.

1. "Shipping Fever of Horses," by J. R. Mohler.
2. "Shipping Fever in Kansas City," by A. Trickett.
3. "The Bacterial Findings in Shipping Fever," by A. T. Kinsley.
4. "Shipping Fever in the Southern States," by Peter F. Bahnsen.
5. "Shipping Fever on the Pacific Coast," by O. A. Longley.
6. "Control of Shipping Fever," by Walter L. Bell.
7. "Shipping Fever in Rural Districts," by J. D. Fair.
8. "Shipping Fever in Chicago," by G. B. McKillip.
9. "The Commercial Side of Shipping Fever," by A. N. Wentworth.

While the surgical subjects will be considered in connection with the excellent clinic that has been arranged for, the following subjects will be presented in a brief practical form at the regular sectional meeting:

- "Sutures, and Suture Materials," by L. V. Lacroix.
- "Haemostasia," by J. W. Adams.
- "Antiseptics," by L. A. Merillat.

ASSOCIATION OF VETERINARY FACULTIES AND STATE EXAMIN-
ING BOARDS OF NORTH AMERICA.

President, S. Stewart.

Secretary, Jacob Helmer.

Monday afternoon, December 28, 2 o'clock.

Call to order by President S. Stewart.

Reading of minutes of previous meeting.

Report of Secretary-Treasurer, Jacob Helmer, Scranton, Pa.

Address by the President, S. Stewart.

Discussion opened by W. Horace Hoskins, Philadelphia, Pa.—Langden Frothingham, Boston, Mass. J. L. Drexler, Thibodaux, La.

Report of Sub-Committee on collection of data leading to uniform Veterinary College instruction and State Board Examinations.—Thomas E. Maloney, Fall River, Mass. E. W. Babson, Gloucester, Mass.

Discussion general.

"The Value and Methods of Teaching the Fundamental Subjects in the Veterinary Curriculum," by H. S. Murphey, Ames, Iowa.

Discussion opened by Jacob Helmer, Scranton, Pa.—Pierre A. Fish, New York State Veterinary College, Ithaca, N. Y.

OFFICIAL ROUTE FROM THE EAST.

SPECIAL TRAIN FROM NEW YORK TO NEW ORLEANS VIA CHATTANOOGA.

Dec. 26th—

Lv. New York, Pennsylvania Railroad.....	10:08 A. M.
Lv. West Philadelphia, Pennsylvania Railroad.....	12:15 noon.
Lv. Baltimore, Pennsylvania Railroad.....	2:15 P. M.
Ar. Washington, Pennsylvania Railroad.....	3:20 P. M.
Lv. Washington, Southern Ry.....	4:00 P. M.
Ar. Lynchburg, Southern Ry.....	9:25 P. M.
Lv. Lynchburg, Norfolk & Western Ry.....	9:35 P. M.
Ar. Roanoke, Norfolk & Western Ry.....	11:05 P. M.
Lv. Roanoke, Norfolk & Western Ry.....	11:15 P. M.

Dec. 27th—

Ar. Bristol, Norfolk & Western Ry..... (Eastern Time)	3:45 A. M.
Lv. Bristol, Southern Railway..... (Central Time)	2:55 A. M.
Ar. Chattanooga, Southern Railway, C. T.....	10:20 A. M.
Six-hour layover to visit Lookout Mountain and battlefields.	
Lv. Chattanooga, Alabama Great Southern.....	4:30 P. M.
Ar. Birmingham, Alabama Great Southern.....	8:30 P. M.

Dec. 28th—

Ar. Meridian, Alabama Great Southern.....	1:25 A. M.
Lv. Meridian, N. O. & N. E.....	1:30 A. M.
Ar. New Orleans, N. O. & N. E.....	7:00 A. M.

REGULAR DAILY SCHEDULE WITH THROUGH PULLMAN, SLEEPING CARS AND A LA CARTE DINING CAR SERVICE.

Dec. 26th—

Lv. New York, Pennsylvania Railroad.....	3:34 P. M.
Lv. West Philadelphia, Pennsylvania Railroad.....	5:42 P. M.
Lv. Washington, Southern Railway.....	9:45 P. M.

Dec. 27th—

Lv. Lynchburg, Norfolk & Western.....	3:28 A. M.
Ar. Roanoke, Norfolk & Western.....	5:15 A. M.
Lv. Bristol, Southern Railway.....	9:15 A. M.
Lv. Chattanooga, Alabama Great Southern.....	6:05 P. M.
Lv. Birmingham, Alabama Great Southern.....	10:05 P. M.

Dec. 28th—

Lv. Meridian, N. O. & N. E.....	2:55 A. M.
Ar. New Orleans, N. O. & N. E.....	9:10 A. M.

RATES TO NEW ORLEANS.

New York to New Orleans, Winter Excursion.....	\$56.30
Philadelphia to New Orleans, Winter Excursion.....	52.30
Baltimore to New Orleans, Winter Excursion.....	47.30
Washington to New Orleans and return, Excursion.....	45.00
New York to New Orleans, one way.....	33.15
Philadelphia to New Orleans, one way.....	30.90
Baltimore to New Orleans, one way.....	28.50
Washington to New Orleans, one way.....	27.20
New York to New Orleans, party fare, one way.....	27.20
Philadelphia to New Orleans, party fare, one way.....	25.40
Baltimore to New Orleans, party fare, one way.....	23.40
Washington to New Orleans, party fare, one way.....	22.68

PULLMAN SLEEPING CAR FARES.

From New York.....	Lower berth \$8.00	Upper berth \$6.40
Philadelphia	Lower berth 7.50	Upper berth 6.00
Baltimore	Lower berth 6.50	Upper berth 5.20
Washington	Lower berth 6.50	Upper berth 5.20

TRAINS FROM CANADA AND THE NORTH AND FROM NEW ENGLAND THAT WILL
CONNECT WITH THE SPECIAL TRAIN FROM NEW YORK.

Dec. 25th—

Lv. Montreal, Grand Trunk Ry.....	8:10 P. M.
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Dec. 26th—

Ar. New York, New York Central.....	7:26 A. M.
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Dec. 25th—

Lv. Toronto, Toronto, Hamilton & Buffalo Ry.....	5:20 P. M.
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Dec. 26th—

Ar. New York, N. Y. C. & H. R. R.....	7:50 A. M.
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Good connection from New England points by all rail or sound steamer
lines for special train or regular daily service.

ABOUT SECURING TRAIN ACCOMMODATIONS.

Everyone who has attended the A. V. M. A. and other large conventions knows the advantages of traveling on a special train with their own party. But in this instance, in addition to the superior service, privacy, etc., there is the difference of the beauty

of the trip and time of arrival. It will be noted that the *special train* will give you six hours in Chattanooga and get you in New Orleans at 7 a. m. on the day of the opening of the convention. Plenty of time to get settled in your hotel, washed up and breakfasted before going to the opening exercises. Whereas, the regular daily schedule train, does *not* give you the stopover in Chattanooga and does not get you into New Orleans until 9.10 a. m. Now while there is no question but what there will be 100 people going from Canada, the Middle Atlantic and New England States, Baltimore and Washington, the arrangements for special train service cannot be arranged for unless a hundred *signify their intention of going*. So in order to secure the advantages of this special train service, every person who hopes to participate in it should *write at once* to Mr. L. J. Ellis, Eastern Passenger Agent, Norfolk & Western Railway, 1245 Broadway, New York, requesting him to make reservations for them. If you neglect it now, you will regret it when it has become time to start and no arrangements have been made for your pleasure and comfort.

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And when we have proceeded thus far, we are confronted with the realization that the veterinarians of sixteen states and those of the federal government are fighting a plague that threatens the live stock industry of our country; and while their desires are to attend the A. V. M. A. convention and visit romantic New Orleans, they are mindful of the fact that their first duty is the suppression and control of *Foot and Mouth Disease*, and they will uncomplainingly make the sacrifice and let their brothers in the non-infected states go on without them. But will they go? At first they expressed regret at the possibility of having to do so, and admiration at the uncomplaining sacrifices of those that were obliged to remain at home and fight this dreadful scourge. Then the thought of all the federal men and state veterinarians from sixteen states (many of them containing the heaviest veterinary population—one including the president and another the secretary of the association), having to be left behind, made the success of

the meeting a serious question, and a postponement until after the great feat of destroying the monster that threatens our live stock interests was suggested. The suggestion was acted upon by a poll of the executive committee by the secretary, resulting in a majority vote for postponement. A second poll of the executive committee was made by the chairman of that committee, again giving a majority for postponement. Expressions also came from Louisiana, fully appreciative of the possible effect that the existence of Foot and Mouth Disease in sixteen states, in the very heart of the membership, would have upon the meeting, and making it evident that a successful meeting at a propitious date would be much more satisfactory than a poorly attended meeting at the dates fixed; as the object of the meeting, there, as in other places, is to improve the conditions of the profession and impress the public with the importance of veterinary work. This applies even more forcefully to the meeting in Louisiana than it would in the northern or western states where it usually meets. It can do the profession a lot of good in the far south with a large impressive gathering, and as it is its first visit there, and not likely to return soon again, of course that is what it should be. But if held before the Foot and Mouth Disease is stamped out, the veterinarians' obligations to the live stock interests will make that impossible; and the chances of their work in that direction being completed before the dates set for the meeting (the last week in this month) are extremely doubtful. However, President Marshall, coming to the conclusion that neither he nor the executive committee have the power to postpone the meeting under the by-laws, has polled the membership, and the result of that poll will be found on page 366 of this issue. If the vote is *not* for postponement, get busy on your arrangements for transportation and hotel accommodation according to the foregoing information. If it is for postponement, the same information will apply later, when the new dates have been fixed.

(Continued on page 366.)

FOOT AND MOUTH DISEASE.

Despite the vigorous measures that were at once begun by State and Federal authorities to confine this present outbreak to the area where it first made its appearance—Southern Michigan—and stamp it out there, it spread rapidly, and very soon thirteen States had been quarantined: Massachusetts, New York, Pennsylvania, Indiana, Illinois, Michigan, Ohio, Wisconsin, Maryland, Iowa, Rhode Island, New Jersey and Delaware. In fact, it is more extensive than any of the five previous outbreaks that have occurred in the United States since 1870, and more States may be quarantined, not mentioned above, before this reaches REVIEW readers. We do not say this in a pessimistic frame of mind, as we have every confidence in the machinery of the State and Federal governments; but merely to account for any differences in the conditions that may be reported later that do not exist at this writing. From the office of the Bureau of Information of the United States Department of Agriculture the following paragraph gives the history of the present outbreak:

“The present outbreak first appeared in Southern Michigan. How it was introduced there is not known. Shipments of diseased hogs from this place which passed to Chicago are believed to be responsible for the infection of the pens in the Union Stockyards. Once the yards became infected there was danger that every shipment of live stock through Chicago to other parts of the country might pick up the germs of the disease and spread the contagion. These shipments, composed largely of feeders and stockers, were sent to farms for fattening and did not remain in Chicago long enough for the disease to show itself in external symptoms. Some of the cattle, carrying the contagion, after shipment develop external lesions and this accounts for the outbreak of the disease in States as far apart as Iowa and Massachusetts. For this reason a large force of Federal inspectors is now running down every shipment and examining the animals or herds at their place of delivery.”

The first effort of the Department is to discover and segregate all animals sick with the disease or that have been exposed. To this end the Federal and State inspectors are now tracing up, through bills of lading and railroad records, all shipments of live cattle which have been made during the last sixty days out of any of the infected or suspected districts. The herds of animals so shipped are located and immediately examined by veterinarians. In this way the presence of foot-and-mouth disease has been discovered in various places in the present wide area now under Federal quarantine. Similarly, the numbers of all cars in which animals have been transported from these districts have been obtained, and these are being located and thoroughly cleaned and disinfected.

Following the imposition of a general Federal quarantine, and the killing of actually infected herds, comes a farm-to-farm inspection of the entire quarantined area. Later, when it becomes clear that the disease has been localized, it will be possible for the Federal and State authorities to free from quarantine all but the actually infected counties or districts and allow the uninfected territories to resume interstate shipments of stock.

That sort of thing takes time and requires zeal on the part of those engaged in the work. It is reassuring, however, to know that we have such well-equipped State and Federal organizations, to systematically handle this immense country-wide proposition. Wherever it appears in a State, a quarantine is immediately thrown around that State, and then the interior investigation pursued and the extent of the infection within its borders determined. The State authorities dealing in a like manner with the farms, and destroying all animals in a herd, even if but one case is found, slashing the hides of the animals to render them valueless and insure against exhumation of the carcasses for the skins, and burying deep, covered with lime. Thus the infection is removed at one stroke from that herd—the herd is no more. It seems like drastic measures on first thought, but when the terribly infectious nature of the malady is considered, and the worthlessness of recovered cases, and the fact that the

disease recurs in animals apparently cured, and that these recovered animals may be infection carriers for a year, even when they show no signs of the disease themselves, it is apparent that the course adopted by the Federal government is none too drastic, and is in fact the only measure that will prove effective. It is an expensive disease in countries where it has gained a real grip as the following figures from the U. S. Department of Agriculture will show. In the last serious outbreak in Germany, the German government spent \$2,000,000 in fighting it. In 1890, official statistics showed that in the German Empire 431,235 cattle; 230,868 sheep and goats; and 153,808 swine were affected with the disease. During the same year the pestilence ravaged live stock in France, Italy, Belgium, Austria-Hungary, Switzerland, Roumania and Bulgaria. In 1883 it was estimated that the disease cost England \$5,000,000. On the occasion of the last outbreak in the United States in 1908, \$300,000 was appropriated by Congress, and was spent in stamping out the disease. It is a much bigger job this time, and will require more time and more money to accomplish, but there will be no let up until it is completely eradicated.

In as much as that we have been questioned by medical men and laymen as to the danger of this disease being communicated to human beings, and have learned that veterinarians are constantly being asked the same question, we are reproducing here a statement on that very phase of the subject from the U. S. Department of Agriculture. For while veterinarians are entirely familiar with the nature of this disease, we know that they will be glad to rest the responsibility of the human end of it upon so great an authority as the U. S. Department of Agriculture.

“HUMAN HEALTH AND THE FOOT-AND-MOUTH DISEASE.—The anxiety that has been expressed in several quarters in regard to the effect upon human health of the present outbreak of the foot-and-mouth disease is regarded by Government authorities as somewhat exaggerated. The most common fear is that the milk supply might become contaminated, but in view of the

precautions that the local authorities in the infected areas are very generally taking, there is comparatively little danger of this. Milk from infected farms is not permitted to be shipped at all. The only danger is, therefore, that before the disease has manifested itself some infected milk might reach the market. For this reason experts in the department recommend pasteurization. As a matter of fact, however, pasteurization is recommended by the department any way for all milk that is not very high grade and from tuberculin-tested cows.

"It has been demonstrated by experiments which have been made in Denmark and Germany that pasteurization will serve as a safeguard against contagion from the foot-and-mouth disease just as readily as it does against typhoid fever, but in any event it must be thoroughly done—the milk must be heated to 145 degrees F. and held at this temperature for 30 minutes.

"In this country the foot-and-mouth disease has been so rare that there are few recorded cases of its transmission to human beings. In 1902 a few cases were reported in New England and in 1908 in a few instances eruptions were found in the mouths of children, which were believed to have been caused by contaminated milk. In both of these outbreaks the sale of milk was stopped as soon as the disease was found among the cattle. As long therefore as the disease can be confined by rigid quarantine to certain specified areas the danger from this source is very small. Should the pestilence spread all over this country and become as general as it has been at various times in large areas in Europe, the problem would become more serious. Under any circumstances, however, pasteurization would be an efficient remedy. Where pasteurization is not possible and where there is any reason to suspect that the disease may exist the precaution of boiling milk might be advisable.

"Cows affected with the malignant form of the disease lose practically all of their milk. In mild cases, however, the decrease may be from one-third to one-half of the usual yield. The appearance of the milk also changes. It becomes thinner, bluish,

and poor in fat. When the udder is affected, the milk frequently contains coagulated fibrin and blood, so that a considerable sediment forms, while the cream is thin and of a dirty color. These changes, however, occur only when the disease is in an advanced stage, and, as a matter of fact, the disease is not permitted to pass into an advanced stage, as any stricken animal is at once slaughtered.

"Men who come in contact with diseased animals may also become infected. In adult human beings the contagion causes such symptoms as sore mouths, painful swallowing, fever, and occasional eruptions on the hands, finger tips, etc. While causing considerable discomfort, however, the disease is rarely serious. Where it is very prevalent among animals, some authorities believe that it is fairly general among human beings, but that the disturbances it causes are usually so slight that they are not brought to the attention of the family physician. There is, however, a very good reason for everyone giving the diseased animals as wide a berth as possible, namely, that otherwise they may easily carry the disease to perfectly healthy herds. Federal inspectors engaged in the work of eradicating the pestilence are thoroughly equipped with rubber coats, hats, boots and gloves, which may be completely disinfected; and others who lack this equipment are strongly urged not to allow their curiosity to induce them to become a menace to their own and their neighbors' property.

"The disease, in short, is dangerous because of the loss that it occasions to property, and not because of its effects upon the health of mankind. At present all infected herds are being slaughtered as soon as they are discovered, the carcasses buried, and the premises thoroughly disinfected. Until all danger of infection has been removed in this way the local authorities quarantine the milk.

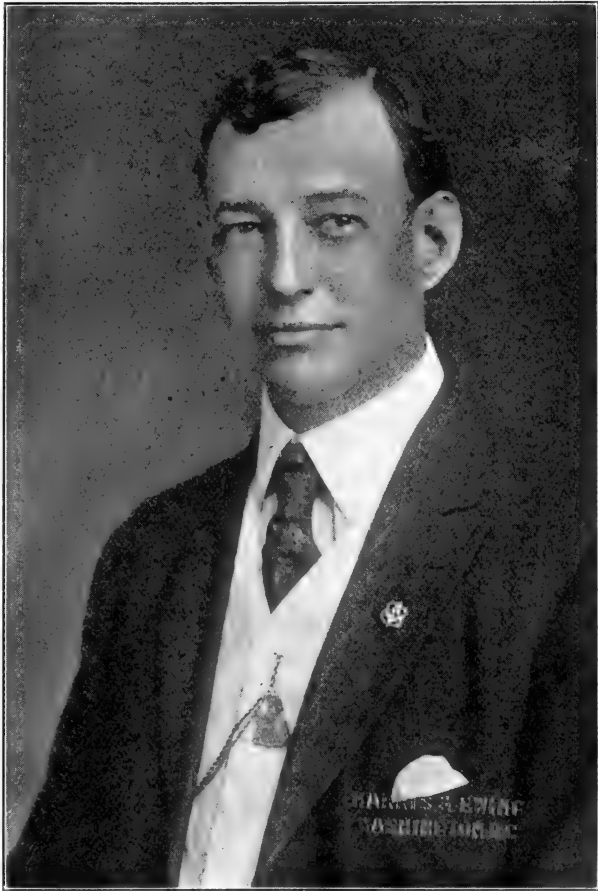
"Those who wish additional precautions are recommended to use pasteurized milk, but as has already been said, this recommendation holds true whether or not there is any fear of the foot-and-mouth disease."

SECRETARY WALKLEY AND THE LOBECK-LEWIS BILL.

Feeling that veterinarians both in and out of the B. A. I. service throughout the country, whose pleasure it has *not* been to meet Secretary Walkley of the National Association of Bureau of Animal Industry Employees, would like to look upon the genial but earnest countenance of the man who spent four months in Washington during the last legislative session in the interest of the Lobeck-Lewis Bill, was re-elected secretary of the above-named association at Denver in August after his return from the national capital, and will probably be asked by the national B. A. I. association to go back as their representative during the next session of Congress, we are publishing his picture here. There is no question but what Dr. Walkley is keenly interested. Besides, he has acquired a knowledge of the ways of the legislators and will lose no time "learning the ropes" when he goes down this time. And last but by no means least, he has a personality that wins; and we sincerely hope that for the sake of the cause, he will see his way clear to again accept this important mission, should his brothers in the national body request it, even though he will be obliged to make some personal sacrifices to do so. In the meantime the association is not idle; it is making every legitimate effort to bring its cause before the legislative body. The following is one of *many* suggestions of means of educating Congressmen and Senators on points relative to the B. A. I. men's work and their needs.

"All Branches are requested to appoint a Legislative Committee of three or five members whose duties it should be to interview all Representatives and Senators in their respective districts and use every possible effort to induce them to visit packing houses and stock yards and observe Bureau Employees while engaged in the performance of their official duties. Employees in field work are also urged to induce Congressmen and Senators to visit dipping vats and become familiar with the Bureau work in connection with tick and scabies eradication. As

members of the House and Senate Committees on Agriculture are keenly interested in the eradication of hog cholera it is very important that all members of Congress be made acquainted with



DR. S. J. WALKLEY.

the magnitude and the unpleasant nature of the work and its economic value in conserving the swine industry of the Nation. Whenever it is found practicable, members of Congress should be urged to witness the hog cholera serum demonstration by Bureau employees. The Legislative Committees of the various

Branches are urged to make careful check of the Congressmen and Senators in their respective states to see that none are overlooked. If there should be any question as to which Branch should interview any member of Congress, local Secretaries should correspond with each other in order to reach a definite understanding. If, for any reason, the Branches cannot prevail upon any particular member of Congress to make a personal observation of Bureau Work, this fact should be reported to the National Secretary, giving the name and address of the member of Congress, result of correspondence or interviews, and other particulars."

It is also quite probable that the National Association of B. A. I. Employees will send a representative to the A. V. M. A. convention at New Orleans. Indeed such a movement has already been instituted. Dr. J. E. Gibson the president of the N. A. B. of A. I. E. is looked upon by the executive committee as the logical man to fulfill that mission, and will probably be prevailed upon to do so. Nearly every state and local association throughout the country have indorsed the Lobeck-Lewis Bill, and it only remains for President Gibson to get the indorsement of the A. V. M. A.

All B. A. I. men probably already know of the movement that has been started to create a fund, to be known as The Salmon Memorial Fund, with which to erect a monument to the memory of the great man that laid the foundation of the United States Bureau of Animal Industry and acted in the capacity of chief of that bureau during the first quarter of a century of its existence, and are all extremely interested in the project. To them we will say that Dr. S. J. Walkley, 185 Northwestern avenue, Milwaukee, Wis., will receive all contributions to that fund, coming from Bureau Veterinarians, and will transmit same to whoever is to receive the general funds.

Dr. J. F. De Vine filled a contract with the French government, the last week in November, for 500 horses for military purposes; which the doctor states was a paying enterprise.

ORIGINAL ARTICLES.

FILTERABLE VIRUSES.*

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(Continued from Last Issue.)

The observations of Bordet on pigeon diphtheria and of Bordet and Fally on fowl diphtheria, particularly the successful cultivation of a specific micro-organism, by which the investigators were capable of reproducing the clinical symptoms of the disease, again opens the question of the identity of fowl diphtheria and epithelioma contagiosum of chickens. Carnwath, Uhlenhuth and Manteuffel, Ratz, v. Betegh and others consider these diseases to be identical; the careful experiments of Bordet and the observations of Haring, Sweet and others, on the other hand, do not support this view.

Haring, particularly, has shown that the immunity conferred by an inoculation with the virus of epithelioma contagiosum does not prevent development of clinical roup. In a few experiments carried out with epithelioma virus from Pennsylvania, I was unable to produce diphtheria; still, there are possibilities that the amount of virus introduced was not sufficient and, furthermore, that the diseases in America have no relationship to each other. Some experiments of Ward show very clearly that epithelioma contagiosum is constantly and readily transmitted by inoculation, whereas roup is not (in 5.8 per cent. only). Some of his experiments permit the conclusion that the virus of epithelioma contagiosum is occasionally mixed with the virus of fowl diphtheria or roup. In considering these results it is absolutely essential that further experiments be undertaken on quite similar lines and from the above-mentioned viewpoint.

* According to a report for the Tenth International Veterinary Congress, 1914, in London.

A large number of filterable viruses remain active for a long period when kept outside the body, when protected from light and changes of temperature. Nocard found the virus of African horse sickness virulent after two years and four months, when hermetically sealed in glass tubes. Haring had some virus of epithelioma contagiosum in a test tube at ordinary laboratory conditions and found it of marked virulence after an elapse of four years. Similar observations on other viruses suggested to v. Prowazek that some microscopically visible forms of the vaccinia virus are very resistant. Many viruses, like those of vaccinia, fowl pest, pernicious anemia, even hog cholera, are resistant against desiccation, whereas, on the other hand, the causative agents in cattle plague, foot and mouth disease, etc., are destroyed in a very short time.

Similar differences are noted in the thermo-resistancy of the various viruses. Temperatures above 60 degrees are fatal for most of the filterable viruses; temperatures below 50 to 60 degrees C. attenuate certain viruses. Higher temperatures are more effective when the virus is tested in a medium free from all albuminous substances.

Kuhn found that the pleural exudate, containing the virus of African horse sickness, when heated to 60 degrees C., will become attenuated in degrees which depend on the length of exposure. The attenuation is indicated by a prolonged period of incubation.

Peter attenuated the virus of hog cholera by heat and recommended such a virus for vaccination, but the experiments of Dorset and Uhlenhuth and his collaborators could not, on account of inconstant results, confirm his observations. Lower temperatures act generally as a preservative on filterable viruses. With the exception of the virus of sheep-pox and hog cholera, all filterable viruses are resistant, in varying degrees, to putrefaction.

The behavior of filterable viruses towards chemicals has only revealed the fact that remarkable differences exist. However, no systematic study has been undertaken to demonstrate these

differences, with the exception of glycerin and antiformin. All filter passers, as far as data are available, with the exception of the virus of sheep-pox and rinderpest, are uninjured by the action of glycerin. Uhlenhuth has demonstrated that antiformin does not affect the virus of hog cholera; his experiments were of great importance in eliminating, in a simple manner, the secondary invaders. Friedberger and Yamamoto found the vaccinia virus inactive when treated with a 1 per cent. solution of antiformin. These few experiments do not permit of any conclusion. It is very important to have further and more systematic tests, with chemicals, carried out on various viruses.

Since v. Prowazek and Halberstadter have shown that protozoa are more easily destroyed by such cytolytic substances (5 per cent. solutions in one hour), as bile, bile salts and saponin, than bacteria (except the pneumococcus), experiments have been carried out on a fairly large number of filterable viruses with the aim of throwing some light on their probable nature, whether bacterial or protozoon.

The reaction on protozoa by these cytolytic substances is a process of saponification of the lipoids of the periblast.

The experiments so far reported have not been conducted with sufficient uniformity to permit far-reaching conclusions for a classification of the viruses.

Vaccinia is only destroyed by rabbits' bile, a 5 per cent. dilution of sodium taurocholate does not affect the virus. Landsteiner and Russ found the virus of fowl pest inactive after treatment with a 0.5 per cent. solution of saponin. According to Rogers, the fowl plague, to Lingard the rinderpest, and to Kraus the rabies virus are destroyed by bile. On the other hand, Landsteiner and Russ found the bile inactive on the fowl plague virus. The virus of epithelioma contagiosum of pigeons was not changed by a 1 per cent. solution of saponin and a 10 per cent. solution of sodium taurocholate in the experiments of v. Prowazek and de Beaurepaire Aragao. Fukuhara found the rabies virus inactive after treatment with lecithin. Sieber demonstrated the great resistance of the virus of African horse sick-

ness against 5 and 10 per cent. solutions of saponin, sodium taurocholate and bile. Rous and Murphy mention the fact that the chicken sarcoma virus does not resist treatment with saponin or bile. Inasmuch as Uhlenhuth and his collaborators have tested, in one experiment only, the effect of a 10 per cent. solution of sodium taurocholate on the hog cholera virus and found it to be inactive, I have undertaken a large series of experiments on which I reported in 1912. These experiments demonstrated the fact that a 10 per cent. solution of sodium taurocholate did not destroy the hog cholera virus when it was exposed to the chemical for 24 hours, at 37 degrees C., in two experiments. In two other tests even a 5 per cent. solution was destructive, and rabbit bile attenuated the virus, although it still immunized. Saponin in 10 per cent. and 5 per cent. solutions was uniformly detrimental to the virus, a 1 per cent. solution attenuated the virus in a similar manner as above mentioned for the rabbit bile. Lecithin in a 20 per cent. solution did not kill the hog cholera virus.

From the experiments it is apparent that the hog cholera virus does not belong in the group of protozoa, and the findings of spirochaetes by King, Baeslock and Hoffmann, which they associate with hog cholera and even consider to be their causative agents, are not well supported by the results with these cytolytic substances.

The extreme minuteness of the viruses accounts, perhaps, for their contagious nature and virulence. It explains also why most of the viruses are active in extremely high dilutions. Yet these facts are not absolutely constant, and we find differences even when the best possible position and the natural portals of entry are selected. The observations of Theiler during his studies on the immunity of African horse sickness, that the virulence of a virus is quite different when it is obtained from various localities, we have also found in connection with some work on hog cholera. The hog cholera virus in the eastern states of America frequently produces in highly susceptible pigs only a mild and chronic form of cholera as compared with the viruses

from Iowa or North Dakota, which invariably causes the acute septicemic form of the disease. An immunity produced with an eastern strain will not protect against a western strain, but the reverse is easily achieved. Such experiments are very difficult to carry out, as the individual disposition is extremely variable even when age and species of the animal are kept as constant as possible. Considering, at the same time, the remarkable fact that most of the filterable viruses are only transmissible to animals of the same species, the exceptions being rabies and vaccinia, it is not surprising that the causes of these conditions have not been studied in detail. Another obstacle, which is found in these studies, is the observation that many filterable viruses are changed by mutation to such an extent that they show entirely different biological properties. The virus of foot and mouth disease loses its pathogenic effect for bovines when passed through little pigs of a special race (Loeffler); the fowl pest virus loses its virulence when transmitted to pigeons. These few facts should be carefully considered when working with filterable viruses and proper statements as to the origin of the virus should be made; the experiments being carried out only with a constant and unmutated virus.

Inasmuch as most filterable viruses on account of their minuteness obey the physico-chemical laws which govern the diffusion of gases and of substances in solution in liquids, they are extremely contagious or possibly "air-born." The contagiousness depends, however, largely on two conditions: the source and the portal entry of the infection.

When a virus is eliminated by the excretions, the respiratory air, the skin, etc., and can exist outside of the host under favorable conditions and can enter into the body through the injured skin and mucous membrane of the intestinal or respiratory tract, it is (by experience) extremely contagious. For some viruses an inoculation into the skin by bites of an infected animal or by intermediate insect carriers are absolutely necessary; under these conditions the direct contagiousness has not been observed. The transmission of filterable viruses of animals by insects has been

conclusively proven only for the heart-water diseases of sheep in South Africa, epithelioma contagiosum of chickens and horse-sickness virus by stomoxys in the experiments of Schuberg and Kuhn.

Bacteria play a very important secondary part in many diseases caused by filterable viruses; in some diseases, indeed, the investigations thus far carried out do not permit a final conclusion as to the actual importance of these invaders. Quite recently two different kinds of bacteria have been isolated in distemper of dogs and the accepted conclusions, based on the findings of Carre, that this disease of dogs is caused by filterable viruses, has been severely shaken. Galli-Valerio and Kregenow have already reported that the filtrates of the secretions in distemper are not infectious, and the results of Ferry, Torrey and others are, therefore, not surprising. Whether the real distemper of dogs is actually caused by a *B. paratyphosus* B., as v. Wunschheim claims, has still to be proven. In a recent publication Th. Smith calls attention to the frequent occurrence of a bacillus identical with that isolated by Torrey in pneumonia of guinea pigs, and it is apparent that a possible relationship between the two organisms exists.

The question of the importance of the bacillus of fowl diphtheria has already been mentioned above, and it is only another instance where further careful experimental work is badly needed. At the present stage of knowledge, one is not justified in condemning the findings of Loeffler, Muller, Hauser and others in connection with this disease. The work of Pfeiler and Kohlstock has shown how important a hog cholera-like organism can be in connection with diseases in pigs. The very careful experiments of these investigators have clearly proven that actually two forms of hog cholera exist in Germany and Hungary, one being caused by the known filterable viruses, the other due to a bacillus related to the hog cholera group, the bacillus of Voldagsen. As the disease in young pigs has great similarity with the one caused by the filterable viruses, it was not properly recognized by many investigators and was classed, without fur-

ther investigations, with hog cholera. Even if the association of the *B. suipestifer* with the disease is very close, the interpretation of its importance by Uhlenhuth and his associates, following the findings of Dorset and McBryde, De Schweinitz, Theiler, Hottinger, Smith and others is too erratic, and it is surprising that similar mistakes are not more often made. In my opinion the secondary invaders, in many diseases due to filterable viruses, are as important as the virus itself, particularly in hog cholera. No careful pathologic-anatomical studies are available in which the statement is actually proven that the secondary invaders are primarily responsible for the post-mortem lesions. If we conclude by analogy, comparing African horse-sickness and rinderpest with hog cholera, the secondary invaders at least cause all the changes which are not purely confined to the capillary system. In the septicemic form of hog cholera the general petechiation alone indicates the effect of the filterable virus.

In practically all filterable viruses, secondary invaders are common. In African horse-sickness, Theiler and the author frequently found a colon bacillus in the spleen. In cattle succumbed to pleuropneumonia, various types of cocci have been isolated from the heart blood.

The streptococci and the staphylococci found in the contents of the blebs in foot and mouth disease also belong to the same group, and explain the findings of Niesser and others. Although Poels, Basset, Gaffky and Bemelmans have proven the filterable nature of the virus of equine distemper, and Gaffky and Luhrs have demonstrated by transmission experiments the probable protozoan character of contagious pleuropneumonia of horses, the *B. bipolaris* and the streptococcus *pyogenes equi* have secondary importance.

In many diseases the secondary invaders are so constant that they can be isolated in pure culture and the recovered animals remain carriers for a long time, as has been shown by Petrie and O'Brien in connection with a guinea-pig septicemia.

The importance of spirochaetes in hog cholera, to which King and his associates have devoted several publications, has already been discussed.

Arnheim considers the spirochaetes found in hogs to be saprophytes of the intestinal tract. I cannot entirely support his views, inasmuch as I have seen these protozoa also acting as true tissue parasites in a submaxillary lymph-node following a severe croupous conjunctivitis with tremendous quantities of spirochaetes. Even without hog cholera such spirochaete infections of the ectoderm have been seen.

In some instances the filterable viruses even cause the reappearance of latent protozoa (*pirosoma bigeminum* and *mutans*) in rinderpest or in heart water.

The possible symbiotic relationship of the virus to pathogenic bacteria has not been studied in many animal diseases. V. Pro-wazek has shown that the "energetic symbiotic" condition not only increases the virulence of the organism but also the effect on the host. The study of this relationship is of considerable practical importance in the attempts to control one or more agents of the disease by immunization.

The study of the anatomical changes caused by filterable viruses has not been appreciated sufficiently. The interest being more concentrated on the attempts to find the causative agent naturally led only to the search for cell inclusions and chlamydozoa. On account of the remarkable biological differences of the filterable viruses, the effect on the different parts of the body, the specific selection of certain tissues, a condition called by Lipschutz "tropismus," no uniform anatomical picture for comparison or classification can be expected. Yet the study of the morbid anatomy of pleuropneumonia of cattle by the author, which has recently been confirmed by Boynton, shows in an interesting manner how specifically the virus affects the lymphatic system of the tissues with which it is brought in contact. The careful historical study of da Rocha-Lima, in connection with yellow fever, revealed facts which can undoubtedly be used for diagnostic purposes.

Inasmuch as the macroscopic lesions for some of the animal diseases, like hog cholera, horse-sickness, etc., show similarities to those found in the large group of hemorrhagic septicemias, it

would appear to be of interest to find out whether or not there exist more specific differences. Glaesser, Dammann and Stedefeder describe, in hog cholera, capillary, endothelial lesions combined with focal, small-cell infiltration and necrosis. In horse-sickness the stasis in the portal system combined with marked capillary and cellular degeneration of the liver and kidneys was predominant in the few cases studied by the author.

These few examples gave me the impression that probably valuable information could be obtained as to the mode of the pathogenic action of the filterable viruses by means of careful histo-pathological studies. Furthermore, proper attention should be paid to the primary and to the secondary lesions and their respective anatomical relation.

The problem of immunity in filterable viruses is interesting not only from a historic point of view, since smallpox and the anti-rabic vaccination are the most successful methods of immunization we know, but also on account of its great practical value in the eradication of destructive epidemics. The results which have been obtained in the various diseases are very encouraging, but one is unable to mention in a review *all* the facts which have been collected.

The existence of a natural resistance in filterable viruses as an absolute immunity against the diseases of one species of animal has been known for a long time (horses against contagious pleuropneumonia of cattle, cattle against hog cholera). An individual or racial immunity is frequently met with in experimental work with filterable viruses, particularly in hog cholera; also, according to Lowenthal, in pigeon epithelioma. In reality this immunity is probably an acquired one, as has been proven, particularly for sheep-pox (Nocard), hog cholera and rinderpest (Soberheim).

With the exception of fowl pest, most of the filterable viruses have a subacute course and therefore confer in many instances an acquired immunity. A complete immunity of permanent duration is only observed after a very severe attack or after repeated reinfection. The latter course, particularly, is very important in the establishment of a lasting immunity.

There are virulicidal substances produced, which can be tested in vitro and also particularly demonstrated in animal experiments, but in many instances these bodies do not seem to be of vital importance for the immunity. The appearance of the virulicidal substances is not regular, they may be absent at a time when an immunity is already established or the antibodies disappear from the blood when the immunity is of continuous duration. Many attempts have been made to apply the normal bacteriological immunity tests to filterable viruses, but contradictory results only have been obtained. The author had, in connection with the study of several diseases, an opportunity to review the various statements in the literature. In vaccinia all experiments have shown that the alexin fixation or precipitation tests do not give reliable results. The work of Heller and Tomarkins, Hylander, Bermbach and others for the alexin fixation on one side, and the result reported by v. Prowazek and v. Pirquet for the precipitin test on the other hand, can be confirmed. In this dermatropic disease not a serum immunity, but a cellular or "histogenous" (v. Prowazek) immunity, is important. Similar conditions will also probably be noted in epithelioma contagiosum of chickens; the report of Sweet on the presence of complement fixing antibodies has not been confirmed so far. In sheep-pox a serum immunity is probably present, but the conditions establishing a resistance against subsequent infection has only been superficially studied from a serological point of view.

In the serum of rabid or actively immunized animals, no complement fixing bodies have been found by Heller and Tomarkins, Friedberger, Moser and Baroni, Cinca, the author, and others, when using nervous tissues, whereas Nedrigailoff and Sawtschenko and Zeller report positive results when using the extracts of the salivary glands as antigens.

These discrepancies, due to the preparation of the antigen, explain perhaps the failures which are reported with other filterable viruses. It is only by systematically testing the various tissues or fluids which develop antigenic properties in the animal that one can deny absolutely the non-existence of immune bodies which can be demonstrated by serological methods.

In some unpublished experiments the author found the complement fixation tests very unreliable for the demonstration of an existing immunity in contagious pleuropneumonia of cattle. Only in one naturally infected animal could immune bodies be detected. Poppe has studied this question very carefully and obtained fairly constant results with the alexin fixation test, contrary to the result of Schochowsky; the precipitate reaction of Fornet was even more reliable.

Some means to standardize the value of the protective sera against hog cholera, horse sickness, etc., or to differentiate by quick and less expensive methods, clinically or by post mortem examination, extremely similar diseases (hog cholera and swine plague) or to detect dangerous carriers (pernicious anemia), are certainly needed and it is not therefore astonishing that serological methods have also been applied and tested in these directions.

Lichtenheld thought he had demonstrated antibodies in horse-sickness; in a series of tests made by the author, no complement fixing antibodies could be detected. In hog cholera, with numerous antigens prepared by a multitude of methods, no uniform results were reported by Uhlenhuth and his collaborators, Hutyra, Buchanan and the writer. In foot and mouth disease and swamp fever, neither the complement fixation nor the precipitin reaction proved useful.

The cutaneous reaction being, when positive, a distinct indication of an existing immunity in smallpox, has only been tested in hog cholera (as far as I could review the literature) and there gave negative results. No confirmative information as to the value of the meiostagmin reaction of A. Ascoli for foot and mouth disease, is at hand, and one is hardly able to explain the nature of the antivirulent substances which are concerned in the immunity of filterable viruses. The few scattered, careful serologic tests permit the supposition that an entirely different group of virulicidal bodies is responsible for the protective properties of an immune serum. This ignorance as to the nature of the immunity is clearly felt in all attempts at immunization against

filterable viruses, even when they are the most successful we possess. Even in the immunization against rabies, the actual properties of the antirabic serum are unknown. The observations of Marie, Kraus, Remlinger and others indicate that the serum contains specific rabicidal substances and not, as Fermi explained, purely neurotoxic properties. Yet, the fact that chicken serum loses its normal antirabic effect when the bird is immunized with fixed virus, has still to be explained. Undoubtedly one is not justified in attempting to explain the immunity phenomena in filterable viruses by deductions from the mechanism of immunization in bacterial diseases; fundamental differences exist here, particularly with regard to the antigenic properties of filterable viruses.

Most of the filterable viruses causing septicemic diseases—with the exception of swamp fever and fowl pest—possess antigenic properties, the serum of the immunized animal having protective properties which can of course be demonstrated only by tests *in vitro* or *in vivo*, the latter method being the only reliable one. If, in bacterial diseases, the antigen is, on account of its unknown nature, characterized in a negative manner, the same can be said to be even more true for the filterable viruses. With one or two exceptions, it is entirely impossible to prove an antigen-antibody reaction by our present method, and only the facts (which have been gathered by numerous experiments) that the serum of an immune animal treated with the virus contains antivirulent substances, justify the conclusions that the virus acts as an antigen. The immunization in rinderpest, hog cholera, African horse-sickness, sheep-pox, etc., are examples to illustrate this statement, but when we consider the conditions found for the antirabic serum, vaccinia, contagious epithelioma in chickens, the nature of the immune bodies produced by antigens is an entirely different one. Such conditions are certainly to be expected on account of the marked biological differences of the viruses.

• Aside from these facts, the possible mutation and mitigation of the virus by animal passage is important; the antigenic prop-

erties becoming either constant or entirely lost (lyssa, fowl plague, foot and mouth disease, epithelioma, etc.).

The antigenic properties can also be judged only from the immunity which is conferred by the injection or application of the unattenuated or attenuated virus or by the protective or curative properties of the sera of an animal which has survived a natural infection or has been artificially immunized and hyper-immunized. Whether, in the latter instance, the specific action of the serum is an antiparasitic or antitoxic one, has not as yet been decided for most of the filterable viruses.

The immunization experiments have shown that the filterable viruses act best as antigens when they are used in an unattenuated form of high virulence, best unfiltered and in comparatively large doses for the production of protecting sera. For active immunization the virus is attenuated by heat (sheep-pox: Duolaux); (horse-sickness: Kuhn); or desiccation (rabies) or by chemical substances like glycerin (rabies). In some instances also a specially selected avirulent strain can satisfactorily be used for immunization (blue tongue of sheep). The mode and seat of infection is also important, particularly in pleuropneumonia; the injection of a culture at the root of the tail produces only slight reactions, but a lasting immunity, whereas the application of the same culture in any other part of the body is fatal in most cases. But, as shown by some observations of the author, the virulence of the strain to be used must be previously tested, otherwise even the inoculation at the tail can be harmful.

The few facts cited in this report have only been given with the intention of showing that an immunity is obtained by using the antigenic properties of the filterable viruses and that we are justified in applying the methods for protective immunization of animals, particularly in epidemic diseases.

Inasmuch as a passive immunization is successful in many bacterial diseases, this method was also used in the prophylaxis against rinderpest, hog cholera, foot and mouth disease and horse-sickness; but recent investigations have clearly shown that the artificial condition produced is only of such a nature as to lessen

the severity of a subsequent attack but not to prevent the invasion of the virus (rinderpest: Ward and Wood), (hog cholera: Dorset, Uhlenhuth and others). The value of the simple, passive immunization has therefore lost considerably.

The best possible immunity and protection can only be achieved by a combined active and passive immunization, or, if possible, by an active immunization alone. With regard to the latter, the possible creation of permanent virus carriers should be kept in mind. It is well known that in swamp fever an immune horse can eliminate the virus for years by the excretions, and Lipschutz has shown that also in epithelioma contagiosum the virus can be retained in the parenchyma for a long time. The practical importance of the healthy virus carriers has always been recognized for foot and mouth disease and influenza of horses; for several diseases the existence of such a condition is more readily supported and explained by epidemiological facts than the theory of transmission by insects. Considering these possibilities it is not astonishing that most of the careful experimenters hesitate to recommend the combined methods of sero-simultaneous immunization. To obtain a lasting immunity, the animal has to pass the disease. During the course of the immunization, the animal, like an infected one, can disseminate the causative agent. Citing an example in hog cholera only, Dorset and his collaborators have shown that the vaccinated hogs infect non-immune hogs which were brought in contact, and yet the sero-simultaneous method of immunization is recommended particularly for non-infected premises! No systematic experimental investigations have been conducted to determine whether, in addition to the so-called "Kummerer," apparently healthy hogs may also be carriers of the virus. Is the natural infection of piggeries sufficiently well explained by other epidemiological factors? Definite information is certainly necessary when deciding the policy of a sanitary control of the particular disease.

The results of Borrel, Bridré and Bouquet, in immunizing against sheep-pox with a sensitized virus indicate the way by which we can possibly avoid and control the disadvantages of an

active immunization. However, the number of reports is too small to permit conclusions for the other diseases in which these methods have been used.

For most of the specific dermato or neurotropic diseases due to filterable viruses, only the active immunization by specially mutated or otherwise attenuated viruses has proven to be really reliable and successful.

The immunization of dogs against rabies, after the method of Miessner and Pfeiler, being confirmed by Pokschischewsky, opens a broad field for practical application; we have not as yet lost hope, however, that perhaps the use of a sensitized vaccine is less dangerous than the intraperitoneal inoculation of large doses of fixed virus.

An active immunity frequently confers immunity to the offspring. An inherited immunity is particularly of practical importance in hog cholera (Reynolds) and sheep-pox (Borrel).

SUMMARY.

1. If the process of filtration is used as a means of classification, it must be employed with the greatest possible care. General uniformity of the methods applied should be attempted. In experiments, the time, the pressure, the temperature and the dilution of the virus to be filtered and of the filtrate, also the type of the filter candle, should be recorded. If possible, quantitative tests with the material before and after filtration should be conducted.

2. More experiments with the v. Prowazek-Giemsa ultra filter, also on comparative lines, will probably prove to be of great value in the study of various filterable viruses. In vaccinia and variola at least, a concentration of the virus has been achieved.

3. The morphological studies on "cell inclusions" should not only be extended to specific, "tropic" diseases, but also to septicemic diseases due to filterable viruses. The inclusions are not the disease-producing parasites, but cellular changes which represent the products of reactions of the cells towards the invading virus. The cell inclusions of several diseases have a characteristic structure which can be used for diagnostic purposes.

4. The so-called "Chlamydozoa" and, particularly, the "elementary bodies" deserve more attention than generally given. The possible misinterpretation of serum granules must be eliminated by microchemical reactions and by the use of ultra filters. The findings and results of Noguchi and Cohen on the cultivation of trachoma bodies should now form the basis for all such studies.

WILLIAM T. FLYNN.—National Stock Yards, Illinois, Branch No. 5, is mourning the loss of one of the pioneers of the bureau service at that station. Mr. Flynn passed away very suddenly on Saturday night, October 10th, at his residence, 627 North 8th street, East St. Louis, Illinois, his death being caused by heart trouble. Mr. Flynn entered the service at National Stock Yards, Illinois, in August, 1893, and served as tagger and stock examiner successively until the time of his death. While the entire period of his service was spent at National Stock Yards, Illinois, yet he was widely known throughout the bureau by the many who have seen service at that station. Mr. Flynn was an active and very enthusiastic member of the N. A. B. of A. I. E., and was chairman of the St. Louis National Stock Yards joint gatherings, while considering the organization of the National Association.

In the death of Mr. Flynn the Bureau loses the services of a conscientious and faithful employee, and the local branch loses the support of a beloved and ardent member.

DR. TERRELL HAS A FALL.—President J. B. L. Terrell, of the Tennessee Veterinary Medical Association, fell from the loft of his hospital in Dresden, Tenn., and fractured three of his ribs below the nipple and mashed three in near the spine between the shoulder blades during the latter part of October. The doctor was convalescent at the last writing, but not able to resume work. He has our sincere sympathy and that of the entire profession, we are sure.

DR. WESTRICK GOES TO NEBRASKA.—Dr. C. S. Westrick has gone from Courtland, Kansas to Oakland, Nebraska. We wish the doctor success in his new field.

DISEASES TRANSMITTED BY TICKS; THEIR CLASSIFICATION, TREATMENT, AND ERADICATION.*

Report by Sir ARNOLD THEILER, K.C.M.G., Director of Veterinary Research of the Union of South Africa, C. E. GRAY, Esq., M.R.C.V.S., Principal Veterinary Surgeon of the Union of South Africa, and W. M. POWER, Esq., M.R.C.V.S., Senior Veterinary Surgeon of Natal.

We propose to deal with the tick-transmitted diseases of South Africa, which play, or which have played, in the past a very important rôle in the economics of stock-breeding in the African sub-continent, and at one time baffled both farmer and veterinarian, although we are to-day in the position to deal with most of them in an efficient manner, since we now understand their causes, and the way in which they are transmitted, and since methods have been devised for combating them, based mainly on experiments and researches initiated or elaborated in this country.

The causal organisms of all South African tick-borne diseases are present in the blood-stream, and the diseases caused by them may be placed in three groups: (1) Disease due to an ultra-visible micro-organism, of which there is only one representative, the heartwater of ruminants; (2) those due to organisms living outside the corpuscles (spirochætosis); (3) those due to intra-corpuscular organisms (*Babesia*, *Nuttallia*, *Anaplasma* and *Theileria*).

The only representative of group (1), heartwater of ruminants, may be called an acute septicæmia with effusions in the pericardial and pleural cavities, ecchymoses on the serous membranes, and inflammation of the intestinal mucous membrane. Cattle, sheep and goats are susceptible. The virus, which is present in the blood plasma, passes through a Berkefeld filter candle, and must be of a very unstable nature, since its virulence is sometimes destroyed after twenty-four hours' standing. This disease is transmitted by the bont tick (*Amblyomma hebræum*).

*Reprinted.—Tenth International Veterinary Congress, London.

The spirochætoses, which belong to group (2), are due to an organism found in all classes of stock, horses, cattle, sheep and goats, and as this has been shown in the laboratories of the Union to be communicable from one species to the other, we may reasonably conclude that the Spirochætoses are all caused by one organism, *Spirochæta theileri* (Laveran), which was first found in cattle.

Animals suffering from spirochætosis develop a high fever of but a few days' duration with no other clinical symptoms, at least in our experience. It never ends fatally, the only pathological lesion being a very slight anæmia, indicated in the sheep and goats by the presence of anisocytosis, polychromasia and basophilia. The spirochætæ are transmitted by the blue tick (*Boophilus decoloratus*).

The diseases in group (3), due to endoglobular parasites, are generally called piroplasmoses, and can be subdivided into: (a) Babesioses (*Babesia bigemina* and *B. mutans* of cattle and *B. canis* of dogs); (b) Anaplasmosis (*Anaplasma marginale* and *A. centrale* of cattle); (c) Nuttalliosis (*Nuttallia equi* of horses); and (d) East Coast fever (*Theileria parva* of cattle). Of these, the diseases in subdivisions (a), (b) and (c) (in which infection persists in the blood of recovered animals) may be theoretically considered to represent a phylogenetic series in which the *B. bigemina* represent the complete form of a true piroplasm; the *Nuttallia* an intermediate form, and the *Anaplasma* the last stage, in which the typical protoplasm has disappeared, a view which receives some support from the fact that in the intermediary type, Nuttalliosis, parasites are frequently found in the blood which have little or no protoplasm, and such forms can be artificially produced by the administration of trypanblau.

Of the babesioses in subdivision (a), the one known in South Africa as redwater is identical with Texas fever (*Babesia bigemina*). Its introduction into South Africa is attributed to the importation in the early seventies of last century of immune Madagascar oxen into Natal, whence it spread all over the sub-continent. It is now present in all parts of South Africa, although

not on all farms, and judging from the observation that the degree of immunity enjoyed by recovered animals varies in different parts of the country, it is possible that we have to deal with various strains of babesia, although the introduction of cattle from Texas and Queensland into South Africa has shown that the immunity enjoyed by these cattle in the country of their birth holds good in South Africa.

Redwater may be described as a per-acute anæmia due to the dissolution of red corpuscles and liberation of hæmoglobin, part of which is excreted by the kidneys and stains the urine. It is an acute disease accompanied by a high fever, which is of but short duration, often succeeded by so-called relapses, which are actually due to mixed infection, principally of *B. mutans* and *A. marginale*, but during which *B. bigemina* often reappears in the red blood corpuscles, as the latter organism remains in the blood-stream after the animal has recovered, although the form in which it remains is not exactly known. Redwater in South Africa is transmitted by the blue ticks (*Boophilus decoloratus* and *B. australis*). The next disease of this type occurring in cattle, due to *Babesia mutans*, is a fever with but low exacerbations lasting generally several weeks, and causing a slight anæmia, characterized by anisocytosis, slight polychromasia and basophilia. No deaths have yet been attributed to this cause, although it is frequently found in the blood of cattle which died of other causes. As in redwater, the immune animal retains the infection in its blood, but, unlike redwater, the organism can frequently be seen in the blood of apparently healthy animals. *B. mutans* is a small parasite; it is usually classified as a Theileria, the organism resembling this genus in size and shape, but it must be considered to belong to a different genus; it undergoes multiplication in the blood-stream, taking the form of rosettes, somewhat resembling those of *Nuttalli equi*, and for this reason it is a question whether it should not be classified under Nuttallia, which also persists in the blood of recovered animals in a form not yet known.

The babesiosis of dogs is from a pathological point of view

akin to the redwater of cattle. It is transmitted by the dog tick (*Hæmaphysalis leachi*).

The anaplasmoses of cattle belonging to subdivision (*b*) cause what is popularly known as gall-sickness, and give rise to a sub-acute anæmia, frequently of a pernicious character; here the destruction of the red corpuscles does not take place rapidly, as in redwater or biliary fever of horses, but gradually, and it never leads to hæmoglobinuria.

Two forms of anaplasmoses are recognized—a mild one which never leads to death, although the anæmia may be strongly pronounced, and a malignant one, in which about 50 per cent. of the cases end in death, with the symptoms of anæmia and icterus. This mild form is characterized by the presence of *A. centrale*, the malignant by *A. marginale*. The former is generally situated within the corpuscles, and is smaller than the latter, which is mainly placed on the margin. There is a difference of opinion about the protozoic nature of these anaplasms, and some authors are inclined to identify them with Jolly's bodies, but from this view we differ, basing our opinion not exclusively on the morphological appearance of the bodies, but rather on their biological behavior in connection with the disease. The view has also been expressed that the anaplasms belong to the life-cycle of the *Babesiæ*, but experiments do not tend to support this view, as it is an established fact that babesiosis and anaplasmosis can be separated from each other, and are found separated from each other in various parts of South Africa. Further, we frequently find animals which are only infected with the one species of parasite, and which are accordingly only immune against the one present in their circulation. Anaplasmosis is transmitted by the blue tick (*Boophilus decoloratus*).

Nuttalliosis of subdivision (*c*) is found in the solipeds of South Africa, and is met with in all regions, having even a wider range than redwater. The disease is locally known as biliary fever, and may be described as an acute icteric anæmia due to the destruction of red corpuscles by the parasite, which not infrequently gives rise to hæmoglobinuria. The immune animal's

blood retains the virulence, although microscopically no parasite can be detected. *Nuttallia equi* multiplies in the blood by the formation of rosettes with four partitions; it is transmitted by the red-leg tick (*Rhipicephalus evertsi*).

East Coast fever, which belongs to subdivision (*d*) is, from an economic point of view, the most formidable disease of recent times; it is caused by the parasite *Theileria parva*, found in its adult stage in the red corpuscles and in its developmental stages in the lymphatic system, causing a swelling of the lymphatic glands and the symptoms of toxæmia. It is further characterized by the extravasation of serous fluid into the cavities and blood on the surface of the various serous and mucous membranes and also into the tissues of the parenchyma of organs. The developmental stages in the lymphatic glands, known as "Koch bodies," are pathognomonic of this disease, and represent the schizogonic multiplicative forms.

In South Africa the acute form of East Coast fever is principally met with, but there exists also a subacute form, perhaps better called a "chronic" form, more frequently ending in recovery than in death. The latter is principally found in calves borne by immune cows in areas through which the acute disease has swept, and it is possible that inherited immunity is responsible for its existence. It is characterized by the presence of enlarged lymphatic glands in which, as long as the calf is suffering from fever, Koch bodies are met with, although sometimes in very small numbers. In cases of longer standing, when the parasites are absent, the animals are immune. It is commonly found that the blood of such calves does not show any parasites, or but few, which may be mistaken for *B. mutans*, and in such cases differential diagnosis is based on the presence of Koch bodies in smears from the glands. Recovery from the disease is succeeded by immunity, but the immune animal does not retain the infection in its system.

Theileria parva is transmitted by the following ticks of the *Rhipicephalus* group met with in South African cattle, *i. e.*, *R. appendiculatus*, *R. evertsi*, *R. simus*, *R. capensis* and *R. nitens*.

PROTECTION AGAINST TICK-BORNE DISEASES.

Eradication of ticks means prevention of the diseases carried by them, but we propose to deal with this aspect of the problem later under the heading of "Eradication," and here we only refer to protection against these diseases, on the assumption that ticks are not destroyed, since under the conditions of farming obtaining generally throughout the greater part of South Africa animals are permanently exposed to reinfection through the agency of the tick.

We have already shown in the first part of this article that tick-borne diseases can be divided into two groups: to the one of these belong heartwater and East Coast fever, both of which are diseases from which recovery is complete, as recovered animals do not retain the infection in their system; to the other belong the piroplasmoses and spirochætososes, in which the recovered animals are conveniently called "reservoirs of the virus." Under natural conditions the pastures on which these "reservoirs" graze constantly harbor infected ticks, hence all newly born animals, or all animals coming from clean areas, will contract the disease sooner or later through tick infestation. In such cases it is a well-known fact that the young stock, even although not born of immune animals, suffer less from these diseases than older or fully grown ones, and advantage is taken of this by using young animals for restocking, as it has been found that in this way farms grossly infected with ticks can be used for the rearing of stock; or the blood of animals which serve as reservoirs may be used for transmitting the disease to animals newly introduced into infected areas in preference to allowing susceptible animals to become infected through the agency of the tick.

Protection Against Babesiosis and Anaplasmosis in Cattle.

In former days inoculation, which was also practised in Australia, was frequently made use of in South Africa to immunize cattle against redwater. The method was a fairly reliable one when South Africa-born cattle were inoculated, but it had disastrous results when imported highly bred cattle were injected on

account of their high susceptibility. Animals inoculated in this way generally suffered from a mixed infection, and those which survived the redwater attack had in almost all cases to undergo subsequently an attack of anaplasmosis, often complicated with *B. mutans*, on account of the blood used for inoculation containing the germs of these diseases, as well as those of redwater. Formerly this second attack was considered to be a relapse of redwater, and was expected as a matter of course; and the enormous losses of imported cattle after inoculation were, undoubtedly, due in large measure to these secondary attacks of anaplasmosis. With the introduction of trypanblau, however, which proved to be a curative agent for the babesiosis, the position was improved, as this drug could most advantageously be used to cut short the redwater reaction and to entirely control it. It did not destroy all the parasites; they disappeared out of the blood-stream, and the resulting immunity proved to be sufficient to withstand the natural infection. Therefore, while in former days great care had to be taken to obtain a strain of redwater of less virulence, this was no longer so important, and the blood of almost any naturally recovered animal could be used. The injection of trypanblau in no way prevents the attack of anaplasmosis, nor does it, unfortunately, influence it in any way when injected at the beginning or during the reaction.

This is accomplished by passing the blood of an animal which has recovered from both diseases into a susceptible one, and by bleeding the latter at the first reaction and infecting a second one before the attack of anaplasmosis has had time to develop. Susceptible animal number two, as a rule, only develops redwater, and in this way a pure strain of redwater vaccine uncontaminated by anaplasmosis is obtained. It will readily be seen, however, that this method of immunization has a serious disadvantage, inasmuch as animals so inoculated have no immunity against anaplasmosis, and readily contract the latter disease when exposed to natural infection. This method has now been improved upon by the combination in the blood of the animals used for immunization of a strain of babesiosis with that of *A. centrale*, a va-

riety of *A. marginale*, which induces a much milder form of anaplasmosis than that caused by the ordinary type of anaplasma; *A. marginale* causes an average mortality of 50 per cent. Although this combined strain does not invariably protect inoculated animals against the effects of a later natural infection with the more virulent type of anaplasma, fatal results do not follow its use, a very high degree of immunity is conferred thereby, and the breakdowns which occasionally follow immunization are probably due to a sudden heavy tick infestation, to infection with a more virulent strain of anaplasma, or to attacks of other diseases, which lower the vitality of the animal and lead to a reappearance of the parasites in the circulation. Of this new blend of virus—containing *B. bigemina* and *A. centrale*—approximately twenty-five thousand doses have been issued by the Research Institute and have given very satisfactory results.

Protection Against Babesia Canis in Dogs.

Immunity against *B. canis* in dogs can also be conferred by the infection of susceptible animals with blood taken from a dog which has recovered from the disease, and subsequent control of the reaction by the use of trypanblau, but as a rule owners of these animals await the development of a natural attack of this disease, and then treat the affected animal with trypanblau.

Protection Against Nuttallia Equi.

While restocking was going on in South Africa after the war, serious losses occasionally occurred amongst imported equines from attacks of biliary fever caused by the presence of this parasite, and to combat these losses a method of immunization was devised in which the blood of young donkey foals which had recovered from this disease was used for inoculation purposes, as it was found the blood of these animals gave rise to a milder attack of biliary fever than the blood of recovered adults. The mortality from this form of inoculation was only 3 per cent., but the importation of equines fell off to such an extent after restock-

ing was accomplished, that the demand for this vaccine ceased, and it is no longer supplied by the laboratory.

Protection Against Babesia Mutans and Spirochaetosis.

For *B. mutans* infection and for spirochaetosis no protective inoculation is required; practically all animals become infected as soon as exposed to ticks, and all recover.

Protection Against East Coast Fever.

The preventive inoculation against East Coast fever, as practised in certain native areas in the Union, is based on the observation that an intra-jugular injection of spleen pulp or lymphatic gland of infected animals is followed in the majority of cases by attacks of the disease, from which 40 to 80 per cent. of the animals affected may recover—such a method must be considered as an emergency operation, the only object of the inoculation being to save the greatest possible number of cattle under the worst conditions, and to expedite the passage of the disease through a herd where dipping is impracticable. There are many objections to the method, the chief of which is that the relatively large number of animals left in an infected area creates a situation favorable to the perpetuation of the disease, owing to the maintenance of veld infection, through the deaths which subsequently occur amongst the susceptible progeny of the animals which have been immunized for the immunization of which it is not possible to make provision. As a consequence, the immunization of cattle against East Coast fever must either be followed by dipping or concentration operations to ensure the ultimate eradication of infection.

This method has only been extensively used in the native territories of the Transkei where, during the last three years, 251,424 cattle were inoculated, of which 40 per cent. recovered.

Protection Against Heartwater.

No satisfactory method of immunizing against this disease has yet been devised, the instability of the virus rendering experiments with this object in view exceedingly difficult.

ERADICATION OF TICKS.

The ticks which are responsible for the transmission of the blood diseases in South Africa require in their cycle of development, one, two or three hosts: *Boophilus decoloratus* is a one-host tick, *Rhipicephalus evertsi* a two-host tick, *R. appendiculatus*, *R. simus*, *R. nitens*, *Amblyomma hebraeum* and *Hæmaphysalis leachi* are three-host ticks. *B. decoloratus* remains about three to four weeks on one animal; it moults on it from larva to nymph, and from nymph to adult, and only leaves its host as a fully engorged adult. The adult hides in the grass, where the female lays its eggs, which hatch out in about six weeks' time, and the larvæ wait on the top of grasses for a new host. They can live for about seven months. This tick can be easily eradicated either by starvation or by dipping. For the former purpose a fenced-in pasture has to be kept free of all live stock for at least eight months, when the larvæ will all be dead. Under South African conditions game frequently frustrate this undertaking, and it is, therefore, not so reliable as dipping. Provided that the dip always kills the ticks promptly every time an animal is dipped, the dipping process would have to be repeated only once every three weeks, and after eight months a farm would be free of these ticks. The ticks which escape the dip are those on game, but when dipping is maintained they will finally be caught and destroyed.

R. evertsi lives in its larval stage usually in the depths of the ear; it moults there into a nymph, requiring about fourteen days to become fully engorged, when it loses its hold and drops to the ground. It moults here after about twenty to thirty days into an adult which, having found a host, attaches itself to the comparatively hairless parts under the tail. The female requires about six to ten days to engorge. Adult ticks which have not found a host can live fourteen months. The starving-out process accordingly requires at least fourteen months. In order to break the cycle of the tick by dipping, one bath in less than a fortnight would be necessary, but it would have to be of such a nature as to reach the depth of the ear, which can only be accomplished by

direct rubbing out by means of a swab. The adult can be reached more easily by dipping, although it is somewhat protected by placing itself under the tail; the dipping would have to be at least once every fourth day to reach all adults, and would have to be continued for at least fourteen months.

Of the *Rhipicephalidæ*, the East Coast fever carriers, all three behave in a similar manner. The larvæ may only remain on the host for seventy-two hours and then drop off engorged; they moult in from sixteen to twenty-four days on the ground. The nymphs seek a new host, and may also drop after seventy-two hours' attachment, fully engorged: a nymph requires about the same time as an adult to moult. The adult female remains on its host four to ten days, and then drops fully engorged to the ground, where it lays its eggs. The larvæ are able to live about seven months, the adults fourteen months. Starvation will mean shutting up the farm for this period. Dipping to destroy the tick would have to be repeated at least once every fourth day to eradicate the ticks, and would have to be continued for fourteen months.

H. leachi behaves similarly to the *Rhipicephalidæ*. It is the tick of the dog, and this animal would, in the first instance, have to be dealt with in the way indicated.

In *A. hebræum* the various stages remain longer on the hosts, and the dipping intervals may be prolonged. In South Africa, the *Rhipicephalidæ* are at present of the utmost importance; their destruction is in the first instance attempted—this is achieved by dipping at five-day intervals, and, for this purpose, a dip is used containing 2 lb. of arsenite of soda to every 100 gallons of water. This fluid kills all the ticks, and the process can be carried out for any length of time without doing harm to the cattle. Wherever the eradication of ticks is not aimed at, the intervals between dipping are longer, and the strength of the fluid is increased to 2½ lb. per 100 gallons of water.

Practical experience has proved that dipping systematically carried out over a long period will destroy most ticks. The usual experience proves that in all but rare instances all ticks disap-

pear, the exceptions being on farms with game, sheep, goats and horses, which are not dipped, and a complete destruction of all ticks would be obtained, provided all animals were dipped. The dipping, as carried out in South Africa, has made it possible to reduce the number of ticks and to check their increase on those farms where it has been introduced and properly carried out.

ERADICATION OF TICK-BORNE DISEASES.

Having considered briefly the protection of animals against the mortality caused by tick-borne diseases, and the eradication of the tick itself—the ideal method of suppressing such diseases—we will now devote a little time to the consideration of practicable methods of stamping out these diseases, which we have seen belong to two groups of diseases—the one in which the immune animal acts as a reservoir, the other one where such is not the case. We propose to deal first with the latter class, of which East Coast fever is the most formidable one.

East Coast Fever.

There are three methods of dealing with East Coast fever, and they have all been used at different times and in different localities:

(1) The direct stamping out means the slaughtering of all cattle that are exposed to the same infection. The farm is fenced, and kept free of cattle for fifteen months, whilst other stock than cattle graze over the suspected field; it is true they maintain the tick life, but as these animals are not susceptible to the disease they do not propagate it, and ticks which drop off them when mature have freed themselves of all infection. After fifteen months restocking can safely be undertaken.

(2) The separation of infected cattle from uninfected ones, with a view to eradicating the disease, can be accomplished where sufficient uninfected ground is available for the movement of the latter. The method is based on knowledge of the following facts—that East Coast fever has an incubative period of from six to twenty-five days, with an average of thirteen, that the disease

has an average duration of twelve days, and that infected ticks, which have fallen from infected animals, require an interval of at least sixteen days for moulting before they can attach themselves to a fresh host. Operations are begun by taking the temperatures of all animals while running on infected veld. By the use of the thermometer infected animals are separated from healthy, and the latter are then moved on to clean veld; here they are kept for a period of sixteen days, during which time animals showing a rise of temperature are destroyed; and after the expiration of this period the animals whose temperatures have remained normal are moved to another clean camp before any of the infected ticks which may have dropped off in camp number one have had time to moult. Here they undergo a further detention of sixteen days, and, at the end of this period, they may be looked upon as healthy and moved out of the vicinity of the outbreak.

In this way East Coast fever was for a long time successfully dealt with in Natal, where the removal of about 30,000 head of cattle was carried out without an accident; but operations were unfortunately brought to an end by a native rising. This method is, however, only possible where non-infected ground is obtainable, and, after removal, the infected ground must be kept free of cattle for a period of at least fourteen months.

(3) Dipping may be called the most reliable method to cope with East Coast fever; it stops the disease immediately, and animals not infected on the first day of dipping are out of danger. The dipping should, however, be done every third day, but five days' interval may also be successful. The three days' dipping is necessary in order to kill the intermediary stages of the transmitting ticks, which even drop after seventy-two hours. Its good results are due to the fact that an infected tick does not immediately discharge the infection the moment it attaches itself, but in the case of the adult only after seventy-two hours; it remains then infective for one hundred and twenty hours, and it is only after this time that it has freed itself of the infection.

The effectiveness of the three days' dipping would indicate

that the nymphæ, which drop off after seventy-two hours' attachment, are infective only in the last hours of their attachment. The fact that adults are only infective between the seventy-second and one hundred and twentieth hours would indicate that animals other than cattle acting as hosts can transmit the disease if infected ticks detach themselves from the insusceptible host within this interval, but in actual practice it has not been found necessary to take this circumstance into consideration.

For the eradication of East Coast fever on a farm the dipping of cattle must be maintained for a period of at least fourteen months after the last death of an animal due to the disease. Only sick cattle are capable of infecting ticks; ticks off other animals do not transmit the disease; hence, it is not essential to have all ticks killed, provided the disease has once disappeared. Under the conditions of a possible reinfection, it is advisable to carry out the dipping regularly in order to keep the tick life in check until reinfection of the farm is excluded.

For the purpose of the three days' interval dipping process, a bath of reduced strength is sufficient—1 lb. of arsenite of soda for 100 gallons of water is recommended.

The present policy of the Veterinary Division in dealing with East Coast fever is the eradication of the disease—this is done by quarantining the infected farm for a period of fifteen months, and by dipping all cattle in intervals of three days so long as the disease is rampant. When the outbreak has been checked, the interval may be prolonged to five days, but may not extend to a week. The erection of a dipping tank and the periodical dipping can be made compulsory in proclaimed areas.

The number of dipping tanks in use at the present time in the various Provinces of the Union in which East Coast fever exists is: Transvaal, 371; Cape, 750; Transkei, 352; Natal, 2,600.

Heartwater.

Heartwater is a disease of the bush veld, that is of the warmer portions of South Africa, which are only inhabited by the bont tick, by which this disease is disseminated.

Eradication of this disease is only possible by starving out, provided all susceptible stock are removed from the farm. Transmission of the disease is affected both by nymphæ and adult ticks, also by adults which have passed through their nymphal stage on an unsusceptible host. The latter point must be taken into consideration when starving-out operations are undertaken, and all animals which convey the tick must be excluded during the process, otherwise it is conceivable that infected adult ticks may be carried into an area from without by unsusceptible animals, and their exclusion must be maintained for a period of over twenty months, to ensure starvation of both nymphs and adults.

For the eradication of heartwater, dipping of cattle alone is sufficient to eradicate the disease. Sheep cannot so frequently be dipped as cattle; the cattle must collect the ticks and bring them to the dipping-tank. In areas where cattle are systematically dipped heartwater disappears; in this way sheep-farming in the coastal districts of the Cape has again become possible after it had to be given up on account of heartwater.

To the second group of diseases, in which recovered animals retain the power of infection by the agency of the tick, belong the babesiosis (redwater and *B. mutans*), spirochætosis and anaplasmosis of cattle, nuttalliosis of equines and babesiosis of dogs. Eradication of these is only possible under the condition that all ticks are destroyed. As stated before, this is least difficult in the case of the blue tick (*Boophilus decoloratus*), as it can be accomplished under favorable circumstances in eight months by persistent dipping. Under such conditions the young stock bred on the farm do not become infected and, therefore, acquire no immunity. This is proved by the fact that such young stock contract disease when removed to tick-infested farms, showing the possibility of eradicating the disease transmitted by the blue tick.

Under the conditions of South Africa of the present time, the total destruction of all tick life is only attempted in a few instances. The dipping-tank—in comparison with the whole sub-continent—is in existence on a comparatively small number of farms. Immunity of cattle is, as yet, required, and it may be

obtained by a small number of ticks which escape the dips and transmit the disease from immune adults to the newly born calf; or, in cases in which farms are entirely free, the difficulty may be overcome by inoculation of such stock, as explained before.

Of all disease-communicating ticks in South Africa the most difficult to eradicate is the red-leg tick (*R. evertsi*), the transmitter of biliary fever in equines. It lives on all classes of stock; its places of attachment, as explained before, are in the ear during the larval and nymphal stages, and under the tails as an adult, all of which are well protected places against the action of the liquid in the dipping-tank. Only mechanical removal will secure their disappearance from the ear; and, since sheep and goats are not dipped, and these harbor the same tick, it is evident that its destruction is well-nigh impossible. Notwithstanding this, the constant dipping of all cattle and of horses, where a large number are kept, has caused a considerable reduction of the numbers of this tick on farms where this is carried out; but, nevertheless, biliary fever occasionally makes its appearance.

The starvation method would have similar results in the case of the blue tick—that is, after eight months, fasting, all will be dead.

No endeavor has been made to eradicate the carrier of biliary fever of dogs—*Hemaphysalis leachi*—although some farmers dip their dogs regularly with their cattle, as the treatment with trypanblau is generally regarded as sufficiently effective.

CONCLUSIONS.

(1) Experience in South Africa has shown that it is relatively easy to eradicate the diseases of stock transmitted by ticks of the one-host type (*Boophilus decoloratus*), the fact of the animals being a reservoir of the virus being of no importance.

(2) The eradication of the diseases of which the immune stock does not act as a reservoir is a practicable undertaking, notwithstanding the difficulty of destroying all the ticks of the two and three-host species (*Rhipicephalidae* and *Amblyomma*).

(3) The eradication of the disease transmitted by the tick of

the two-host type—*R. evertsi*—in which the animal acts as a reservoir is, although theoretically possible, practically very difficult.

(4) The best means of eradicating the ticks is the periodical immersion in a solution of arsenite of soda of an average strength of 2 lb. to 100 gallons of water, contained in a suitable swimming-tank, and continued over a period of sufficient length.

(5) This method of eradicating the diseases by eradicating ticks should be recommended to all Governments engaged in colonizing tick-infested countries, as the most effective method of protecting pedigree stock imported for the improvement of native breeds.

(6) As a temporary method, and until a policy of eradicating ticks can be adopted, and the work carried out, protection by inoculation against diseases in which immune animals act as reservoirs should be attempted. For this purpose it is advisable that inoculation stations be erected in such countries as export cattle to countries in which tick-borne diseases exist, where the immunization against the more serious of these diseases, such as redwater and gall sickness (babesiosis and anaplasmosis) could be undertaken without any risk to the cattle of the country itself.

BREEDS OF DRAFT HORSES.—Under this caption, Mr. G. Arthur Bell, Senior Animal Husbandman, Animal Husbandry Division, U. S. Department of Agriculture, has compiled a bulletin, known as *Farmers' Bulletin* 619, in which he presents the most important features in connection with the breeds of draft horses in this country. He deals with the *Points of the Draft Horse*, the *Belgian*, with an excellent cut of both stallion and mare; the *Percheron*, also showing cut of stallion and mare; the *French Draft*; the *Clydesdale*, with cut of stallion and mare; the *Shire*, showing cut of stallion and mare, and the *Suffolk*, with cut of stallion. The bulletin comprises 16 pages, and is very interesting and instructive. It is published from the Bureau of Animal Industry of the U. S. Department of Agriculture, under date of November 16, 1914.

ANTHRAX.*

REPORT BY DR. W. H. DALRYMPLE, OF THE LOUISIANA STATE UNIVERSITY
(DEPARTMENT OF VETERINARY SCIENCE), BATON ROUGE, U. S. A.

In this report it has been deemed unnecessary to enter into details with reference to the disease, anthrax, *per se*, as the main facts are already known to veterinary sanitarians generally, but rather to consider a few specific points concerning it, which may be of more or less general interest.

I have thought that mention of animate carriers of anthrax infection which have come under my own observation might serve a useful purpose, and I have been prompted to allude to this phase of the subject more particularly on account of some experimental work having been pursued at the Agricultural Experiment Station of the Louisiana State University, U. S. A., during a recent summer.

In the greater part of our more authentic literature concerning this disease allusion is made, in a more or less cursory manner, to various living agents as carriers and spreaders of the infection, such, for example, as different species of blood-sucking insects, carrion feeders of different kinds, both animals and birds; but, so far as I have been able to find, details of the results of actual tests with such are either lacking, or, at all events, somewhat meagre.

Owing to severe losses having been occasioned from time to time from anthrax in my own State of Louisiana, and in the Lower Mississippi Valley generally, I had become convinced that infection was being spread by the activities of certain living agents, chiefly carrion feeders, which previously had only been suspected, the suspicion, however, being quite strongly founded, on account of their periodic contact with anthrax carcasses during seasons which afforded favorable climatic conditions for the

development of infection on areas where the disease had already existed, and where strict sanitary measures were not carried out. New areas and fresh foci of infection, and a wider general occurrence of the disease, could not be accounted for in the absence of carriers that could move from place to place, and thereby extend the territory of infection.

This led to some systematic work being undertaken at the Louisiana Experiment Station to verify, if possible, the suspicion previously entertained as to the probability of infection being disseminated through the medium of such agencies.

The subjects used in the tests were: The turkey buzzard (*Cathartes auro*), the carrion crow (*Catharista atrata*), the dog, pig, cat, opossum (*Didelphys virginiana*), and the common fowl.

The member of the Experiment Station staff in charge of this work was Dr. Harry Morris, Assistant Veterinarian and Bacteriologist, and the following is a brief summary of the results obtained.

The term "buzzard" will be used to include both the turkey buzzard and the carrion crow, as they frequently scavenge in company.

The experiments were conducted in a wire-screened room, with concrete floor and walls, which is a part of the "animal-house" of the station. Buzzards were confined in roomy cages, the bottoms of which were covered with heavy wrapping paper. After feeding, the paper was removed from the floors and the cages re-papered, and the fæces collected from the cages as soon after dropping as possible. Anthrax spores were used in three different ways, viz.: (1) Fed in meat-balls, which were thoroughly infected; (2) through infected carcasses of rabbits; (3) injections of suspensions of anthrax spores made directly into the crop.

Cultures were made from pieces of fæcal matter about the size of a common pea, placed in a test-tube with 10 c.c. of sterile water, and shaken up, and from this suspension agar dilution plates were prepared. Eighteen to twenty-four dilution plates were made from each specimen examined, and while fifteen

examinations were made from a single buzzard that had been ingesting anthrax material daily, not a single colony was found in 300 plates. This does not seem to agree with the statements, which are credited to Marchoux and Salimbeni, to the effect that "in Brazil the urubus, a species of vulture, after consuming the anthrax carcase, pass large masses of spores from the intestinal tract with their fæces," and yet the birds under consideration are a species of vulture.

Not succeeding in finding infection in the fæces, cultures were made from the contents of different parts of the digestive tract. Several buzzards were fed spores by the methods just described, and the birds destroyed at different periods after feeding (from four to twenty-four hours), with the result that no infection was found beyond the stomach, and but little in that organ.

These experiments would seem to show that anthrax bacteria do not pass through the digestive tract of the buzzard, and are, therefore, not disseminated in the droppings of this bird.

In order to test the question of mechanical distribution of infection through the contaminated feet and beak of the buzzard, anthrax carcasses of rabbits were fed, permitting the bird to devour them as it would under more natural conditions. After feeding, the cages were thoroughly cleansed and re-papered and clean roosts provided. At different periods, ranging from eight to seventy-two hours, after feeding, scrapings were taken from the feet and beak and cultured. As long a time as forty-eight hours after feeding and cleansing the cages virulent anthrax was obtained from both feet and beak. In a state of nature, however, it is possible that the infection would not be found after so long a time, as it would most probably have been washed off or otherwise removed.

Having found infection in the stomach contents, it was thought likely that the vomitus might contain the organisms and become another source from which the disease was spread. These birds are gluttonous feeders, and frequently throw up much of what they have swallowed.

Two hours after feeding on the anthrax carcase of a rabbit a

buzzard emitted a large amount of the flesh, which was carefully collected and cultured, and colonies of anthrax developed on every dilution plate used.

These results would seem to indicate, then, that after feeding upon an anthrax carcase the buzzard is capable of carrying infection for long distances and creating fresh foci in pastures, for example, where the disease had not previously existed, either through the medium of its contaminated feet or beak, or through the vomitus, or through the medium of drinking ponds infected in a similar manner.

Incidentally, it might be stated here that the results of this work at the Louisiana Experiment Station on the buzzard in relation to anthrax distribution has been very largely the means of nearly all of the Southern United States either repealing existing laws for the protection of this bird, or enacting legislation looking to its extermination.

In the case of the dog, spores were inoculated into meat-balls and fed in this way. Fæces were collected at different periods (from twenty-four to two hundred and forty hours after feeding), and cultures prepared in the manner previously described. Infection was found in the fæces one hundred and forty-four hours, or six days, after feeding the spores. Cultures obtained from the fæces destroyed rabbits as readily as the original culture, showing that the virulence was not decreased after having passed through the alimentary canal of the dog. Not only may the fæces be infected, however, but also external parts of the body which have been in contact with anthrax flesh, and infection may also be spread by parts of a carcase which dogs may carry away with them in their wanderings over the country.

A similar test was made with swine. Fæces were collected and examined at different times, ranging from twenty-four to one hundred and sixty-eight hours, and for a period of one hundred and twenty-four hours, or about five days, after feeding anthrax was found in the excrementitious matter.

In some countries swine are permitted to range quite widely, and through the medium of their fæces may distribute anthrax

infection over considerable areas, in addition to the possibility of their dying of the disease and creating fresh centres.

A few cultures were made from the excreta of the cat, which in this case had been fed with anthrax in meat daily for twenty-five days, with the result that for a period of three days after feeding the spores infection was found.

In the southern part of the United States, the Virginian opossum is quite common, and is a great feeder on carrion. Several tests were made with this animal showing that the fæces contained infection for a period of three days after feeding spores in meat-balls, and the virulence of the spores did not seem to be affected after passing through the digestive tract, as shown by inoculation tests on rabbits.

Experiments were also made with the common fowl, feeding anthrax spores, taken from agar slopes, at different periods of time. The fæces were carefully collected, both from the floor of the cage and direct from the digestive tract, and cultured as in the other cases, resulting in the development of the organism. All of the fowls used were destroyed and cultures made from the contents of the alimentary canal. In each case anthrax was found in the posterior part of the tract. Fæces contained anthrax infection for forty-eight hours after spores were fed.

In addition to carrying infection on the hairy exposed parts of their legs and bodies, flies pass in their excreta virulent infection after feeding upon anthrax material. A single "speck" from the common house-fly allowed to feed on anthrax spores was found to produce colonies in such numbers as to almost cover the entire surface of agar in a Petri dish.

My purpose in going into somewhat extended detail here is to emphasize the important part such carriers may play in the spread of anthrax infection, as shown by the experiments alluded to, and more particularly in countries where the enforcement of strict sanitary measures, especially with reference to the proper disposal of anthrax carcasses, may not obtain. Where such are more carefully observed, and under strict Governmental supervision—as is, no doubt, the case in European countries, and especially

where some of the carriers mentioned may not exist—such agencies in spreading infection may be, more or less, a negligible quantity. However, in those parts of the United States of America, and more especially in the semi-tropical latitudes which perhaps have suffered most from this disease in the past, live stock sanitary legislation has now been enacted; greater areas of land are being rapidly placed under cultivation and drainage, &c., with the result that the disease is now being much more intelligently controlled than formerly, and its serious consequences very much lessened.

In bringing about these more gratifying results, it is believed that, in addition to more thorough sanitary procedure, protective inoculation has played an important part. It may be said to be the general custom, in those States where infection is known to exist on, or contiguous to, farms and plantations, to vaccinate the live stock sufficiently early each spring to permit of immunity being conferred previous to the warmer season with its heat and moisture, which favors the development of the organism and transmission of infection to the animals.

Where vaccination has been carefully, regularly and intelligently practiced in this way, its salutary effects are often very apparent, as shown in comparison with instances where protective inoculation has not been so used in the same localities.

While many initial cases occurring in late spring, or early summer, seem to be of the intestinal form, and occasioned by ingestion during grazing, the disease appears to spread, later, as the carbuncular form through the instrumentality of various species of tabanids (horse-flies) that had been contaminated by feeding upon the virulent blood of previous victims of the disease. It is, perhaps, due to this form of transmission that vaccination seems of greater importance in our case.

In those years in which anthrax is more prevalent in the States bordering upon the Mexican Gulf, for example, it is usually found that tabanids are much more numerous; and it is often the case that the greater number of victims are to be found among the work animals (horses and mules) on the plantations and farms

that are not so much exposed to infection through ingestion, but more to inoculation by the puncturing probosces of tabanids contaminated with infected blood from previous feeding. Or, in other words, it has been my personal experience that the earlier cases in a season have resulted from ingestion of the infection; while the later ones, and a greater and more rapid spread of the disease, have been brought about by external inoculation through the agency of these infected flies, which, during some seasons, are extremely numerous in the southern part of the country.

It is believed, however—or, at least, hoped—that, on account of the semi-aquatic life-history of the tabanids, the reclamation of large areas of wet, or swamp, lands, which at present favor the development and multiplication of these flies, of which there are quite a number of species, and with more thorough drainage and cultivation of the lands, the number of these insects will be very materially decreased, and the danger from them, as carriers of infection, relatively lessened.

In the United States the preparation of anthrax vaccines has been chiefly in the hands of commercial firms; and while the manufacturers of such products bear excellent reputations, there has not, until recently, been any Governmental supervision over the preparation of biologic products of this character for veterinary use. A law has now been passed by the United States Congress, however, placing a certain amount of inspection over commercial laboratories of this nature, and requiring standardization of such products for use on the lower animals; and it is believed that in the future increased provision will be made to insure greater protection to stockowners in the matter of purity and potency of such agents.

In this country, vaccines have been used in two forms mainly, viz., single and double-dose vaccines. The former is in the dry state, and is said to be composed of dead anthrax organisms; the latter, in lymph form (Pasteur method), or attenuated bacteria, and administered hypodermically as first and second lymphs. In either form, it is considered to require from three weeks to one month, from the date of the first injection, before immunity is

secured, and which lasts for one season of ten or twelve months.

Sobernheim's sero-simultaneous method of protection has been very little, if at all, practiced in this country that I am aware of.

Occasional outbreaks of anthrax occur in parts of the United States other than those referred to in the more semi-tropical latitudes, but it is difficult to suggest the sources of infection, unless, perhaps, through trade channels in contaminated commercial products, such as feeding stuffs, chemical manures having animal-tissue bases, or, maybe, through transportation of anthrax hides that have escaped the notice of sanitary authorities in the primarily-infected districts. Anthrax hides do, evidently, on occasion, reach the tannery districts, as outbreaks of the disease have been reported as occurring on meadows that had been overflowed by streams into which tannery-refuse-water emptied higher up.

While the effort is earnestly made by live-stock sanitary authorities, in the States in which anthrax infection is known to exist, to strictly enforce their regulations, especially with respect to the careful disposal of intact carcasses, it is frequently very difficult, with the funds appropriated, which are often totally inadequate, to effectually exercise police control, when such control is under State authority only. In this way it is possible for interstate shipments of anthrax hides to be occasionally made without the knowledge of the Federal authorities, and without the owners or shippers being aware that such traffic in, and transportation of, such hides is both illegal and dangerous.

On the other hand, the Federal regulations governing the importation of hides to the United States are almost equivalent to prohibition. United States Treasury Department Circular 23, Division of Customs, 1910, requires, in part, the following:

"A certificate signed by the American Consular Office for the district from which the hides were shipped, showing disinfection by one of the methods hereinafter described, will be required upon the entry of all hides of neat cattle which have not been subjected to a process of tanning, including calf-skins and hide cuttings or parings, or glue stock, with the following exceptions, which ex-

ceptions will not be made, however, in case of importations from districts where anthrax is present."

Then follows the classes of hides, &c., which form the exceptions; and under "Methods of Disinfection" there appears the following:

"Except in the case of hides shipped from districts where anthrax is prevalent, disinfection by any one of the three following methods will be permitted, under the supervision of a representative of the consul:

"(1) By immersion in a 1 to 1,000 solution of bichloride of mercury.

"(2) By immersion in a 5 per cent. solution of carbolic acid.

"(3) By exposure to the fumes of sulphur dioxide in a room tightly closed in which the hides shall be suspended separately in such a manner that there may be a free circulation of the sulphur fumes, and that all parts of the surface of such hides may be acted upon; provided, that there be at least four pounds of sulphur burned for every 1,000 cubic feet of air space, and the rooms shall be kept closed and the hides subjected to the sulphur fumes for at least six hours."

In the case of anthrax hides, we read:

"In the case of hides shipped from districts in which anthrax is prevalent, disinfection by immersion for at least thirty minutes in a 1 to 1,000 solution of bichloride of mercury only will be permitted, and disinfection by such method will be required of all hides of neat cattle and hide cuttings and parings, or glue stock, without exception, imported from any country, when shipped from districts in which anthrax is known to the consul to be prevalent at the time of shipment.

"Consular officers in districts in which anthrax is prevalent should refuse to certify invoices covering hides for shipment to this country unless such hides are disinfected in the manner above provided.

"Certificates of disinfection will be required upon the entry of hides, the product of countries other than those of North America, if imported via ports of such latter countries, and such

certificates shall also be required upon the entry of hides produced in any part of North America if imported via another country and landed and transhipped in that country.

"Hides of a character requiring disinfection under the provisions of this circular, which are not accompanied by a proper certificate of disinfection, will be treated as prohibited importations and refused entry. Disinfection of such hides on the deck of the importing vessel upon arrival in this country, or their entry for transportation to another country across American territory, will not be permitted for the reason that the landing of diseased hides from the importing vessel or their passage through the United States would tend to the dissemination of cattle diseases in this country.

"This circular does not apply to goat-skins, sheep-skins, or to articles manufactured from the hides of neat cattle.

"The regulations herein provided do not in any way modify or affect any regulations under the quarantine laws of the United States."

These regulations are not considered altogether satisfactory, as it is the claim of importing interests that compliance with them would be ruinous to the hides, and the latter are, therefore, not shipped to the American market.

I have it on authority, however, that during the past year there has been some modification of the requirements for the disinfection of hides offered for importation by the countries of Continental Europe. A large number of hides are shipped from Russia, and in view of the impracticability, as claimed by shippers, of disinfecting them in accordance with the provisions of the regulations, they have been permitted to envelop hard dried hides in strong bagging or matting, which materials must, just previous to their use, be disinfected by immersion in a 1 to 1,000 solution of bichloride of mercury in lieu of the immersion of the hides themselves. They are permitted, also, to ship green salted hides and skins in watertight casks, which, to a considerable extent, must overcome the possibility of contamination from them to other articles in shipping.

Unfortunately there is very little available data, so far, concerning the contamination of foodstuffs by hides and skins during the various stages in transit, such as railways, platforms, stations, ships, wharves, &c., although numerous articles and discussions on the subject would lead to the belief that such must at times occur. It might be, however, that some such inexpensive method of protection, as outlined in the modified requirements of the United States Government in regard to hides imported from countries of Continental Europe, would bring about an amelioration of conditions in this respect.

Touching the question of methods of sterilization which would be harmless to hides for subsequent trade purposes, and which seems to be the great objection to those at present in general use, it may be said that the Bureau of Animal Industry, United States Department of Agriculture, has conducted experiments from time to time on anthrax sterilization, over a period of several years, with the special object of obtaining an efficient method for destroying the anthrax spore in hides and skins without injury to the articles themselves; and for the past two years this work has been going on more or less continuously, but has not yet been completed.

It would seem, however, from published reports of the Seymour-Jones and the Schattenfroh methods of sterilization, that there is great promise for the ultimate solution of this extremely important problem, and which must be anticipated with immense gratification by all countries, with respect to their lines of trade that are prejudicially affected through importation of anthrax-infected articles, and the damage to such articles occasioned by previous, or present, unsatisfactory methods of sterilization.

TRAINING MEN FOR PUBLIC SERVICE.—In New York City, New York University has taken the lead in an attempt to bring about better government by training persons already in the city employ. It is bringing to those outside the University, as well as to those within, the training for public service which it has to offer.

**REPORT OF THE COMMITTEE APPOINTED BY THE NEW
YORK HOMOEPATHIC MEDICAL SOCIETY OF
THE COUNTY OF NEW YORK TO INVESTIGATE
AUTOTHERAPY,
NOVEMBER 12, 1914.**

Your committee was appointed at our February meeting, in obedience to the following resolution:

Inasmuch as Dr. Duncan's Autotherapy is being used in public hospitals, and inasmuch as the management of one public hospital objected to its use, owing to the fact that autotherapy had not yet received public recognition, a committee be appointed consisting of three members of the Volunteer Hospital, three members of the County Society and three members appointed by Dr. Duncan, to investigate his methods and report.

The committee really consists of six members, Dr. Duncan having selected three members of the Volunteer Hospital staff to represent him.

For the County Society, Drs. Seward, Harrington and Laidlaw.

For Dr. Duncan and the Volunteer Hospital, Drs. Dieffenbach, Gillingham and Stearns. Owing to his absence from the city, Dr. Stearns was unable to attend the meetings of the committee and does not sign the report.

Your committee realized the pitfalls that await one sitting in judgment on a system of therapeutics. They have tried to profit by the errors of the past. They have remembered that many of our best therapeutic measures were at first misunderstood, denounced and won recognition slowly, while methods of treatment introduced under the glamor of great authority have sometimes proved illusions. They have kept in mind the saying of the great Hippocrates that in the medical art, experience is fallacious and judgment is difficult. They do not pretend to say the last word in autotherapy, but to report to the society its present status in the medical world and especially in response to the resolution

under which the committee was appointed, *whether the treatment has gained sufficient recognition as to warrant its practice in hospitals in this city.*

Your committee finds that autotherapy is now being practiced by many physicians of high standing all over the country, some holding distinguished positions in medical colleges and hospitals, including members of our own society. When the usual rules for making the instruments aseptic are observed, and the directions of Dr. Duncan as to the size and repetition of the dose are followed, there appears to be no danger in its use, or no more danger than in the use of tuberculine, and the sera and vaccines that are in daily use among us. This being so, we believe that physicians in all hospitals should be permitted to use the treatment according to their judgment just as they are permitted to use other therapeutic measures, even those which are dangerous in unskilled hands.

The principal of treating disease by a minute dose of its own poison needs no elaboration by this committee. It is being practiced in some form by physicians of both schools of medicine all over the world. This principal is the beacon-light to-day of experimental and preventive medicine. In this and other societies, the chairman of your committee has expressed the opinion often that the method of applying this principal devised by Dr. Duncan is the ideal method from a theroretical standpoint. It places in the hands of all physicians, even those who are far removed from a laboratory, and for all patients, even those who are unable to afford the expensive bacteriological preparations, a simple and accurate method of giving a dose, strictly autogenous undeteriorated by heat or preserving chemicals, free from delay, the uncertainty and possible error or contamination of bacterial culture. With this opinion your committee is in accord. We found that we were unanimous in our belief that the principal was sound. It remained for us to consider how far this principal had been put in safe operation.

Your committee found that the practice of autotherapy had been developed in two fields: in veterinary and in human therapeutics.

Veterinary Autotherapy.—In May, 1914, your chairman attended a meeting of the Veterinary Medical Association of New York City. A paper on autotherapy was discussed by many members. Every speaker who had tried the treatment endorsed it and quoted cases of the cure of animals that had convinced them of its value. At that meeting there were no reports of any damage done by the treatment.

Some months later, in October, three well-known veterinary surgeons kindly attended a meeting of your committee and testified as follows:

Dr. D. J. Mangan, in his position as Chief Veterinarian of the Department of Street Cleaning of New York City, and other appointments, has in his charge, four thousand horses. He has used Dr. Duncan's autotherapy for four years in all forms of sepsis, and endorses it highly. In some disorders of the horse, as in ozena or nasal gleet, acute infections of the hoof and fistula of the dorsum, autotherapy is by far the best treatment and in some cases the only successful treatment. He believes that he probably cured one case of glanders. In the prevention of sepsis in wounds of the horse, he values autotherapy highly.

Dr. George J. Goubeaud, of Flushing, Long Island, veterinarian to the Department of Health, to the Long Island Kennel Club and to the First Cavalry has used autotherapy for two years, and values it highly, especially in pus infections. He specifies necrosis of the withers, involving the tendon sheath, as conditions formerly incurable but now curable by autotherapy. He has seen no bad results.

Dr. C. W. Shaw has used autotherapy for three years in about one hundred cases. He endorses the treatment thoroughly and has seen no bad results.

Your committee places a high value on these reports of the cure of sepsis in animals. Many of the infections in the lower animals and in man are caused by the same bacteria. The law of infections, immunity and cure seems to be the same for all animal tissues. Practically all our bacterial remedies were worked out on animals. It is found that the results of these experiments can usually be transferred directly to human therapeutics.

Turning to the application of the treatment to human beings, the evidence may be classified as follows:

1. Articles in medical journals.
2. Presentation of patients.
3. Testimony of physicians using the treatment.

1. Articles, both by Dr. Duncan and others, endorsing autotherapy have been published in many of the most conservative journals in both schools of medicine; as the *Medical Record*, the *New York Medical Journal*, the *Boston Medical and Surgical Journal*, *The Practitioner* (London), the *Medical Era*, *Medical Brief*, *Medical Sentinel*, *Lancet-Clinic*, *Paris Medicale*, *Practical Medicine* (Delhi, India), *American Practitioner*, *North American Journal of Homoeopathy*, *New England Medical Gazette*, *Chironian*, *American Veterinary Review*, *British Veterinary Journal*, *American Journal of Surgery*, *Medical Times*, *Therapeutic Record*, etc.

Your committee does not think that this publication carries with it the endorsement of the treatment by the journal, but it does show that the editor thought the claims of the new method of sufficient importance to bring it before his readers, and so much in harmony with current medical thought that the reputation of his journal would not suffer by its publication.

2. *Presentation of Patients*.—Dr. Duncan presented seven patients who had recovered under autotherapy from the following disorders: Acute appendicitis, catarrhal bronchitis, puerperal sepsis, infected finger, compound fracture, furunculosis, acute articular rheumatism with complicating endocarditis. Dr. John Arschagouni presented one patient who had suffered for many weeks from obscure fever with eventual appearance of many abscesses. The patient had been seen by Dr. Laidlaw and Dr. Helmuth, both of whom thought the case serious and recovery doubtful. He recovered completely under Dr. Duncan's treatment.

Dr. Dieffenbach presented himself as an example of cure by autogalactotherapy, having been cured of a persistently recurring ivy poisoning by drinking the milk of a cow that had been fed on

poison ivy. The same treatment had been successful in the case of a child.

Dr. Duncan offered to present many more patients, but the Committee believed that the sifting of the evidence and ascertaining the details of these cases would require far more time than it had at its disposal.

3. *Testimony of Physicians Using the Treatment.*—Your committee has kept in mind the uncertainty of all human testimony and the liability of physicians like other men to be carried away by enthusiasm and deceive themselves honestly as to the value of therapeutic measures. Nevertheless it has seemed to your committee to be important evidence of the value of the autotherapy that educated and experienced physicians all over the country are using the treatment in hospital and private practice. Testimony of this class is presented in letters to Dr. Duncan and the verbal testimony of physicians who attended the meetings of the committee.

The very number of letters is impressive. We have seen five hundred letters from physicians all over the country endorsing autotherapy and relating instances of cure of patients whose disorders had proved refractory to other methods of treatment. Some of these physicians had used the treatment on themselves. The cases are too numerous to quote here. The letters are also too numerous and from too many well-known men to permit the thought that they were gotten up for the committee's perusal. Your committee accepts them as competent evidence. Among the writers we recognize the names of homoeopathic physicians whom we know to be honest and competent observers.

Perhaps even more convincing evidence of the value of autotherapy is supplied by the physicians who attended the meetings of the committee, most of them well-known members of this County Society. They testified as follows:

Dr. J. Wilford Allen.—Case of chronic cough and bronchorrhea, and a case diagnosed by Dr. Carleton as tubercular epididymitis with gleet. Prompt improvement and eventual recovery under autotherapy. Dr. Allen thinks the committee will make a grave mistake if it reports unfavorably of the treatment.

Dr. R. F. Mills has used autotherapy in one hundred cases in the past four years, especially at the surgical and skin clinic of the South Third Street, Brooklyn Homoeopathic Dispensary. In pus cases he has had very good results, only a few failures and no bad results. He values the treatment highly.

Dr. Eric von der Goltz has used the treatment since May, 1913, in seventy cases, mostly gynecological. He values the treatment highly. Had bad results in two cases of tuberculosis, but thinks the dose was too large.

Dr. Thomas B. Kinney, graduate of Edinburg University, and for sixteen years in the British Civil and Military Service, has used autotherapy for one year. He reports five cases with good results. He thinks highly of the treatment.

Dr. E. Wilton Brown has used autotherapy for four years in pus infections and gonorrhea. For pus cases no treatment equals it. He has seen no reactions and no bad results.

Dr. John Arschgouni presented the patient already mentioned. He values the treatment highly.

Your committee has not attempted to give all the available evidence concerning autotherapy. Time and space forbids. It has sought rather that the evidence should be accurate and authentic.

Perhaps the best illustration of the opinion of the committee is given in the words of each member when summing up at the last meeting as follows:

Dr. Seward.—Impressed by the testimony. Worthy of use by all physicians.

Dr. Dieffenbach.—Good treatment in septic and toxic cases in proper doses and technic.

Dr. Gillingham.—The principal is reasonable, logical and scientific. The evidence is convincing that the treatment is good.

Dr. Harrington.—In selected cases a good treatment, where systemic poisoning extends beyond the reach of local measures.

The technic requires more precision in preparation and the size and the repetition of the dose.

The opinion of the chairman has already been given.

Remarks on Technique.—Your committee believes that the

technic of autotherapy requires further elaboration and precision in the size of the dose and the interval between doses. However the most important question before us is not the crudeness of the method, but the soundness of the principle. Crudeness of method and uncertainty of dose are common to all new treatments. The early bacteriological methods were crude enough and there is no agreement yet as to the size and repetition of the dose of tuberculine and other remedies that have been before the profession for many years. Crudeness of method will be corrected by time and experience, but no refinement of method and no improvement in technic should be permitted to take from our fellow-member, Dr. Duncan, the credit as being the first to see the principle clearly and by his own industry and ability work out a *safe and practical technique*, starting autotherapy on a sound practical basis.

Your committee deems it its duty to commend Dr. Duncan for his good judgment in keeping his methods of autotherapy free from the taint of quackery and charlatanism. He has had no secret formulas, nor has he claimed superior skill. His work and thoughts have been given freely to all inquirers. He has been actuated by a high sense of professional honor and responsibility to the sick. There has been no effort to trade commercially on the ignorance and credulity of the people. On the contrary he has gone boldly among his fellow physicians and challenged the judgment of those whose education and experience make them competent judges of his work.

For thus resisting the temptation to exploit his work among the people, when his fellow physicians were hostile and his friends indifferent, we owe him sincere thanks and praise.

Finally, the committee wishes to thank Dr. Duncan for his frank and friendly co-operation in this investigation and also to thank sincerely the veterinarians and physicians who assisted in its work.

(Signed) DR. GEORGE F. LAIDLAW (Chairman),
DR. PERRY J. SEWARD,
DR. WILLIAM H. DIEFFENBACH,
DR. HORACE P. GILLINGHAM,
DR. GOVE F. HARRINGTON.

THE LYMPH GLANDS OF CATTLE.*

By L. K. GREEN, D.V.M., VETERINARY INSPECTOR AT THE PENLEY PACKING COMPANY, AUBURN, MAINE.

Some time ago I was asked by our worthy president to prepare a paper for this meeting on the subject of lymph glands. I have accordingly taken for my subject the lymph glands of cattle.

Usually the first glands presented for inspection are those of the head and region of the throat. Here we find the submaxillary, parotid, postpharyngeal and superior cervical lymph glands.

The *submaxillary* lymph glands are situated superficially in the inferior maxillary space, between the inferior maxilla and the submaxillary salivary gland. The afferent vessels are derived from the anterior nares, the muscles of the lips, cheeks, tissues of the anterior maxillary space, and from the anterior portion of the tongue. The efferent vessels pass to the superior cervical lymph glands.

The *postpharyngeal* lymph glands are located at the base of styloid process of the occipital bone. The efferent vessels are derived from the posterior nares, the cranial cavity, the posterior portion of the oral cavity, the tonsils and the pharynx. The efferent vessels pass to the superior cervical lymph glands.

The parotid lymph gland lies on the massiter muscle, at the superior and anterior border of the parotid salivary gland. The afferent vessels are derived from the anterior and lateral portions of the head and from the temporal and parotid regions, the cranial cavity, the base of the cranium, the tongue, the soft palate, the esophagus and the larynx. The efferent vessels pass to the superior cervical lymph glands.

The *superior cervical* lymph glands are located at the extreme

*Read before the Maine Veterinary Medical Association, at Lewiston, October, 1914.

superior end of the submaxillary salivary gland, just under the styloid process of the occipital bone. The offerent vessels are derived from the immediate surrounding tissues and from the efferent vessels of the three preceding glands. The efferents pass to the inferior cervical glands.

The next presented for examination is the abdominal viscera. Here we find the mesenteric, colic, portal, gastric and splenic lymph glands.

The *mesenteric* glands are found in the folds of the mesentery, near the lesser curvature of the intestine, forming a continuous chain of glands extending from the abomasum to the cecum. The afferent vessels are derived from the lymph and chyle flexures located in the submucosa of the intestines. The efferent vessels pass to the receptaculum chyli.

The *colic* lymph glands are embedded among the large intestines. The afferent vessels are derived from the walls of the colon. The efferent vessels pass to the receptaculum chyli.

The *portal* lymph glands are located on the posterior surface of the liver, embedded in the fatty cushion surrounding the vessels entering the portal fissure. The afferent vessels are from the greater portion of the anterior surface, all of the posterior surface and from the entire glandular portion of the liver. The efferents pass upward along with those of the stomach to empty their contents into the receptaculum chyli.

The *gastric* lymph glands are located in the folds and fissures of the divisions of the compound stomach, and along the course of the gastric blood vessels. The afferent vessels are derived from the walls and from the submucosa of the stomach. The efferents pass upward to the receptaculum chyli.

The *splenic* lymph glands lie at the hilus of the spleen, between the folds of the splenic ligament. The afferents are derived from the superficial and deep portions of the spleen. The efferent vessels pass to the receptaculum chyli.

This brings us to an examination of the lymph glands of the thoracic viscera. Here we find the bronchials and mediastinals.

The *right anterior* bronchial is located at the junction of

the bronchus of the cephalic lobe of the lungs with the trachea. The right posterior bronchial is found at the junction of the bronchus of the right main lobe of the lung with the trachea. The left bronchial lymph gland is located on the left side of the trachea anterior to and near the left bronchus, and is normally the largest of the bronchial lymph glands. A small gland known as the posterior or middle bronchial lymph gland is sometimes found located at the postero-inferior part of the bifurcation of the trachea into the two main bronchi. The afferent vessels of these glands are derived from the lungs. The efferents pass partly to the thoracic duct and partly to the posterior mediastinal lymph glands.

The *anterior mediastinal* lymph glands are located in the folds of the anterior mediastinum along the inferior and lateral parts of the trachea and esophagus anterior to the heart. Their afferent vessels are derived from the pleura, esophagus, pericardium, heart and thymus gland. The efferents pass to either the thoracic duct or to the right lymphatic vein.

The posterior mediastinals are made up of a chain of from eight to twelve lymph glands of varying size located in the post-cardial mediastinum along the superior wall of the esophagus. The afferent vessels are derived from the pleura of the surrounding tissues, the diaphragm, the esophagus, the anterior face of the liver, and the efferent vessels of the bronchial lymph glands. The efferent vessels pass to the thoracic duct.

This brings us to the examination of the lymph glands which remain attached to the dressed carcass. It is usually more convenient to commence with those located in the posterior parts.

The *anal* lymph glands are very small, located in the fatty tissue on the floor of the pelvis. The afferent vessels are derived from the anal region, the root of the tail and surrounding tissues. The efferent vessels pass to the sacral and sublumbar lymph glands.

The *sacral* lymph glands are very small, located along the inferior face of the sacrum, near its lateral border. Their afferent vessels are received from the coccygeal region, pelvic

region, rectum and internal genital organs. The efferents pass to sublumbar glands.

The *sublumbar* lymph glands are located on the side and ventral surface of the lumbar vertebrae, along either side of the abdominal aorta, embedded in fatty tissue. The afferent vessels are derived from the dorsal abdominal wall, the internal genital organs, the urinary apparatus and from the efferent vessels of the sacral, the iliac, the inguinals and the popliteal glands. The efferent vessels pass to the receptaculum chyli.

The *internal iliac* lymph glands are located at about the upper third of the pelvic arch. Their afferent vessels are received from the precrural and superficial inguinal lymph glands, the walls of the posterior abdominal cavity, the pelvic cavity, and from the rectum, internal genital organs, bladder, pelvis and sacrum. The efferent vessels pass partly to the sublumbar glands and partly to the receptaculum chyli.

The *precrural* lymph glands are located in the loose cellular tissue of the flank, just above and inward from the femero-tibial articulation. The afferent vessels are derived from the abdominal wall and the lateral surface of the posterior limb. The efferent vessels pass to the circumflex iliac and sublumbar lymph glands.

The *flank* lymph glands are located subcutaneously in the upper part of the flank. Their afferent vessels are obtained from the surrounding superficial tissue. Their efferents pass to the precrural or to the circumflex iliac glands.

The superficial inguinal lymph glands are located in the male at the neck of the scrotum, beside the penis and in front of the inguinal ring. In castrated males they are embedded in the cod fat.

In the female these glands are known as the supra-mammary lymph glands, and are located at the supero-posterior part of the mammary gland. The afferent vessels in the male are received from the abdominal wall, the thigh and external genital organs, and in the female from the abdominal wall, the thigh and the

mammary gland. The efferent vessels pass to the small deep inguinal glands and to the internal iliac lymph glands.

The *renal lymph* glands are located in the fatty tissue in the hilus of the kidney. Their afferent vessels are received from the kidneys. Their efferent vessels pass to the receptaculum chyli.

The *dorsal lymph* glands are located in the intercostal spaces, imbedded in the muscles and covered by the costal pleura. Their afferent vessels are derived from the dorsal vertebra, dorsal muscles, parietal pleura, intercostal muscles, and diaphragm. Their efferent vessels pass to the thoracic duct.

The *prescapular* lymph glands are located on the anterior border of the shoulder, above the scapulo-humeral articulation, and covered by the mastoido-humeralis muscle. Their afferent vessels are received from the neck, shoulder and upper and lower leg. Their efferent vessels pass to the inferior cervical lymph glands.

The *inferior cervical* or prepectoral lymph glands are located at the entrance to the thorax, anterior to the trachea, and extending into the thoracic cavity. Their afferent vessels are derived from the surrounding tissues, the shoulder, the face, arm and the efferent vessels of the lymph glands of the cervical region. Their efferent vessels on the right side empty into the great lymphatic vein, and on the left into the thoracic duct.

In the preparation of this paper I am indebted to Mohler and Eichhorn's translation of Edelman's Meat Hygiene, and Buckley and Castor's article on "The Regional Lymph Glands of Food Producing Animals" in the twenty-seventh annual report of the Bureau of Animal Industry.

NOTICE TO OFFICIAL DELEGATES TO A. V. M. A.—It is important that all societies electing official delegates to the American Veterinary Medical Association Meeting in New Orleans, should advise the Secretary as soon as possible, that the names of the delegates and the Associations they represent, can be inserted in the official program of the meeting.

Any member having any information that should be properly included in the official program of the meeting should also send it in as soon as possible.

Yours very truly,

4753 Ravenswood, Chicago, Ill.

N. S. MAYO, Secretary.

SULPHOCARBOLATES IN THE TREATMENT OF WHITE DIARRHEA (BACILLARY FORM) OF YOUNG CHICKS.

BY GEORGE D. HORTON, BACTERIOLOGIST, OREGON AGRICULTURAL COLLEGE, CORVALLIS, ORE.

In a recent publication, "Poultry Diseases," by B. F. Kaupp, the following statement is made (page 94):

"A diet of sour milk is said to reduce the loss from white diarrhea fifty per cent., but as the treatment here outlined will reduce it ninety per cent., the sour milk treatment is not worth considering."

Further, on page 99, referring to the treatment outlined:

"The following solution was to be kept before them (the chicks) from the time of hatching to four weeks of age, and then given twice a week for the next few weeks: Zinc sulphocarbolate, fifteen grains; sodium and calcium sulphocarbolate, of each seven and one-half grains; bichloride of mercury, six grains, and citric acid, three grains. This quantity was dissolved in a gallon of water. The result was that eighty per cent. of the next hatch was saved."

In attempts to find a suitable remedy or possible cure for white diarrhea in young chicks the author took occasion to conduct the following experiments as a test of the efficiency of the treatment as recommended above.

Experiment 1:

Thirty (30) chicks, 48 hours, were divided into three lots—lots 1, 2 and 3 of 5, 5, and 20 chicks, respectively.

Lot 1 (5 chicks), check lot, received only five drops of the sulphocarbolate solution.

Lot 2 (5 chicks), check lot, received only three drops of a 24-hour 37 per cent. C. bouillon culture of *B. pullorum*. Salem (Ore.) strain

Lot 3 (20 chicks), received five drops of the sulphocarbolate

solution, also three drops of the bouillon culture of *B. pullorum*, Salem, Ore.

NOTE—The chicks in lot 3 received the sulphocarbolate solution first and then the culture of *B. pullorum*. All of the chicks received the same general treatment, care and feeding, except that the chicks in lots 2 and 3 had before them constantly the sulphocarbolate solution.

Results—Within ten week from the beginning of the experiment all of the chicks in lots 2 and 3 were dead. Microscopic examination of the dead chicks revealed the presence of the organism *B. pullorum*. One of the chicks on lot 1 died, but upon examination no *B. pullorum* was found.

Experiment 2:

Sixty (60) chicks, 48 hours old, were divided into three lots—lots 1, 2 and 3 of 15, 15, and 30 chicks, respectively. The method of handling and treatment was the same as in Experiment 1.

Results—At the expiration of ten weeks' time all but three (3) of the chicks in lot 2 were dead and all but seven (7) in lot 3. Microscopic examination of the dead chicks of lots 2 and 3 revealed the presence of the organism *B. pullorum*. Two (2) of the chicks in lot 1 died, but upon examination no *B. pullorum* was found.

Summary—A total of fifty (50) chicks received the sulphocarbolate treatment, with the result that at the end of ten weeks only seven of the chicks so treated remained alive. From the manner in which the chicks died off and from the general appearance of the seven that remained alive it seems evident that sulphocarbolates in the treatment of white diarrhea (bacillary form) have very little, if any, efficiency.

THE BULLETIN OF COMPARATIVE MEDICINE AND SURGERY, VOLUME I, No. 1, reached us recently, and the reading of it was much enjoyed. This new enterprise in veterinary journalism is to be issued quarterly by the Indiana Veterinary College, and we are looking with pleasurable anticipation for No. 2. The first number contains 30 pages of interesting material and is an excellent beginning.

REPORTS OF CASES.

BLADDER STONE.

By HERBERT HOOPES, V.M.D., Bel Air, Md.

History: About two years ago roan geld, about 18 years old, weighing 1,150 pounds, developed colicky symptoms, and as the writer was unable to attend, a brother practitioner was called, and located a small stone near the end of the penis, which he was able to remove with forceps.

May 13, 1914, about 8.30 p. m., writer was called. The owner thought the horse was having same trouble.

Upon making rectal examination, found bladder much distended, and a large stone lodged in entrance to urethral canal, which was manipulated back into bladder, giving instant relief. However, the owner was advised that only an operation would give permanent relief, and that such an operation was attended with considerable risk. Owner decided to wait.

June 26th, condition recurred, and twice more between that date and July 21, when the horse was cast, chloroformed and prepared for operation.

An incision about 3 inches long was made, starting about $2\frac{1}{2}$ inches below the anus, and running parallel with the urethral canal, into same, cutting down onto catheter.

Using a pair of heavy saw forceps, the stone was grasped and an attempt made to crush it, but apparently without success; and as this would necessitate stretching the urethral canal about 4 inches, it seemed like almost an impossibility, but finally succeeded in breaking into two pieces, about equal in size, and took it in that shape.

Used five stitches in the urethra, after flushing bladder well with permanganate solution 1-5000, and left rest of tissues open.

The old fellow came out from the chloroform nicely, and in two hours was acting like a colt, and continued to do so, until he was put to work 3 weeks later.

As he was quite a distance from home, I saw him the next day, catheterizing him, and flushing bladder, and a week later when I removed the stitches. The owner, however, informing me daily over 'phone of his condition.

The stone weighs 4 ounces, and measures $7\frac{1}{2}$ inches around or across the ends, and 6 inches around the middle.

In fifteen years' practice this is the first case of its kind that I have come in contact with, knowingly.

EXTENSIVE INTERNAL INJURIES TO DOG REVEALED BY POST MORTEM.

By CRITTENDEN ROSS, D.V.M., New York, N. Y.

Answering a hurry call to attend a dog that had been injured by being run over by a grocer wagon, I found an aged collie surrounded by the entire family and several friends, all very much interested in the dog. I had no more than examined the visible mucous membranes when the dog collapsed and respirations ceased. I placed in his mouth a tablet containing $1/100$ grain of nitroglycerine and began artificial respiration. After about five minutes the patient resumed breathing, and at this time $1/130$ grain of strychnine was given, and after a few minutes another tablet of nitroglycerine.

After thirty minutes the animal appeared better, but unable to walk. A guarded prognosis was given, and owner prepared to meet the fatal termination, which occurred four hours later.

Post Mortem—The autopsy revealed the eleventh and twelfth ribs on the right side fractured, the former near the costal cartilage, the latter near the vertebral end (neck). The articular capsule between the first and second lumbar vertebrae was torn and the spinal cord was exposed. The mesentery attaching near the caecum was lacerated, the left kidney was torn loose at anterior, and left suspended by its posterior attachment; while the right ureter was divided about one and one-half ($1\frac{1}{2}$) inches posterior to the kidney. The spleen was divided in two portions, one showing marked clotting and weighing four grams more than the other portion.

CYSTOLITHIAS IN A FEMALE DOG.*

By ROBERT W. ELLIS, New York, N. Y.

In the latter part of September my attention was called to a female collie, aged about three years, that was passing blood with the urine and occasionally some pus. It was the owner's

* Presented to the Veterinary Medical Association of New York City, at its November meeting.

opinion that the trouble was the result of parturition; the bitch having given birth to a litter of rather oversized mongrel pups about six weeks previously. My diagnosis, notwithstanding, was stone in the bladder, which was confirmed by rectal examination. An unfavorable prognosis was given, and an operation suggested. This the owner was reluctant to consider, and requested some form of medical treatment. Sanmetto was prescribed, and given for four or five days with negative results, when the owner requested an operation. The dog was accordingly brought to the office, and on October 2, placed under general anæsthesia (two tablets H. M. C. Formula B hypodermically and a few whiffs of ether), the region immediately in front of the pelvis shaved and scrubbed, and an incision made at that point. The bladder was then lifted up and cystolythectomy performed. A cystolith weighing $2\frac{1}{2}$ drachms, with a burr-like surface was removed. The nature of the surface of the stone indicated that no others had occupied the bladder with it, which inference a rapid inspection confirmed. The incision in the bladder was closed with an uninterrupted catgut suture. The incision in the abdomen was closed with one set of interrupted sutures, and the body bandaged. A catheter was then passed and the bladder washed out with a warm chinosol solution 1 to 500. The daily washing out of the bladder with the chinosol solution, and an occasional rebandaging of the body constituted the after-treatment. The case made an uneventful recovery.

REPORT OF AN ANTHRAX AND BLACK LEG OUTBREAK.

By HERBERT HOOPES, V.M.D., Bel Air, Md.

An outbreak of anthrax occurred in Harford County, Md., close to the Pennsylvania line, the latter part of September, and first part of October, in which nine cows and heifers and ten hogs were lost.

But three weeks after a second vaccination no new cases have occurred, and it is hoped none will, as nearly all of the adjoining farms took the precaution to vaccinate.

About ten days ago black leg appeared on a farm in the central part of the county, three young heifers dying.

Both of these diseases are very rare in this section, this being the first anthrax that I can find any history of in these parts or anywhere close.

A MALTESE TERRIER CRUSHED UNDER MILK WAGON—RECOVERY.

By CRITTENDEN ROSS, D.V.M., New York, N. Y.

Called early one morning to see a Maltese terrier which was run over by a milk wagon.

This dog was quite anemic and weak and evidenced pain by screaming when touched, so that the owner said, "If you think advisable destroy it and prevent its suffering." This was not done, but the little creature was given an hypodermic H. M. C. and taken to the office where it would be under close observation. While at the office the patient was constantly examined and stimulants were applied to the tongue (*pro re nata*) (occasionally) as circumstances indicated, and a large cat that was in the office acted as nurse in keeping the patient warm. The next day the dog was taken home, being much discolored along where the wheel passed over the body. About a week later the patient was returned to the office, and upon examination it was decided that there was a hernia present. The animal was kept on a liquid diet and the client given instructions as to replacing the intestine. An examination of the dog about two weeks later revealed no evidence of the hernia, and the patient having made a complete recovery.

THE NEW YORK CITY ALUMNI ASSOCIATION OF THE IOWA STATE COLLEGE gave an informal dinner on November 20, at the Aldine Club, New York, in honor of Professor Ward M. Jones, General Secretary of the Iowa State College Alumni Association; the professor being in the city in attendance at a meeting of the Association of Alumni Secretaries, at Columbia University. All present enjoyed Prof. Jones' review of the work of the Iowa State College. Four schools were represented: Home Economics, Engineering, Military Science and Veterinary Medicine; and while a nice gathering was present, the regret of those that could not attend on account of previous engagements indicated that a much greater number would have been present had they had a longer notice (but one day's notice having been given). President Pearson was highly spoken of by those who had met him, and those who had not, expressed a great desire to do so. Crittenden Ross, D.V.M. ('14) represented the veterinary school.

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

By PROF. A. LIAUTARD, M.D., V.M.

DIFFICULT PARTURITION IN A MARE [*P. W. Dalling, M.R.C.V.S.*].—Record of a bay Clydesdale mare, which had two foals on previous occasions, but this time had difficulty. By examination, the nose of the foetus was found in the passage and the fore legs being put in proper place, everything was secured with ropes and it was supposed the delivery would soon be over. But when the points of the haunches were just in front of the brims of the pelvis of the mare, all pulling was of no avail. The foetus was twisted over, and over again, but the same resistance prevented the extraction. An extra strength was then applied and part of the foetus finally came out. It had broken in two. The remainder was pushed back in the uterus, and by searching, the hind legs were secured and the balance of the foetus brought out. Examination of the foal revealed that it was abnormally enlarged in the development of the pelvis; all the diameters of the latter being exaggerated and hence the failure to enter the pelvis of the mare. Recovery of the mother was uneventful.—(*Veter. Record.*)

PROTRACTED CASE OF PURPURA [*W. R. Darlis, M.R.C.V.S.*].—A stable of sixty horses had been infected with "Infectious catarrh." One morning, a cob that had worked well the day before, was found with swellings of both hind legs. His temperature was 104 degrees F. Pulse and respirations accelerated. Throat was not sore, there was no cough, no nasal discharge. There were petechial spots on the nose. Purpura was diagnosed. *Treatment*: Four drachms of Lugol's iodine solution were injected intravenously and repeated every day for a week. Temperature came down to 102 and 103. Pulse and respiration nearly normal. Appetite very poor. About the tenth day some improvement was manifested, but on the fourteenth the cob was taken with violent colic, the swellings returned on the lips,

on the nostrils and in 24 hours the head was enormous. Three large patches had formed over the ribs and on the near flank. In four days, the swellings subsided some, and the temperature, which had gone up to 105, began to come down and return to normal. Large patches of skin on the face, the shoulders and the body sloughed out and left the cob a perfect wreck. The convalescence was very long. Lugol intravenously, every day, quinine, chlorate of potash, and tincture perchlo. ferri formed the base of this tedious treatment.—(*Veter. Record.*)

STREPTOCOCCUS AND STAPHYLOCOCCUS VACCINE IN CANINE PRACTICE [*W. H. W.*].—Bull dog, when seen had a portion of the skin over the carpal joint honeycombed with sinuses, discharging pus. Antiseptic treatment was used with no result. The affected skin was excised. All went well for several months when a further area of skin became affected and as excision was impossible on account of the large surface involved, streptococcus and staphylococcus vaccine (P. D. and Co.) was resorted to—50 millions, 75 millions were without results. A third dose of 100 millions was followed with septic disturbance. Repeated for five days, no ill results were produced. 200 millions were then given for two days more. After the third injection, the sinuses began to heal, no fresh new ones appeared. After the fifth, there was no more discharge, no sinuses seemed to exist anywhere and the skin looked almost normal. The last dose was given as precautionary. Recovery, if it lasts, shows at least as good results as an operative treatment would.—(*Ibidem.*)

CALCULI IN DOUBLE COLON [*Charles C. Hoadley, M.R.C.V.S.*].—A horse has worked for several years in perfect health and without having ever shown any abdominal pain of any nature. Lately he has had slightly painful colics, which had never assumed violent character. For nine days he had passed but very little feces and rectal examination did not reveal any signs of obstruction. He died and at the post-mortem examination two calculi were found in the double colon. These calculi were practically of equal size, weight and shape. They had facets on their faces showing that they had been in constant contact and when taken from the intestine they were separated only by 18 ounces. The two together weighed 14 lbs. 2 ounces, they both measured at the widest part about six inches.—(*Veter. Record.*)

FRENCH REVIEW.

By PROF. A. LIAUTARD, M.D., V.M.

A NYMPHOMANIAC MARE AND OVARIAN TUMOR—SECTION OF THE PEDUNCLE—RECOVERY [*Prof. Cadeac*].—This is the publication of a case observed several years ago, of a mare bought very cheap on account of her ugly disposition. Perhaps castration would cure her. After preparation, she was secured in stocks and the first steps of the operation performed; viz., the perforation of the vaginal septum and introduction of the hand, which then discovered an ovoid enormous tumor, which it was impossible to bring out of the vagina. This method for removal of the growth had to be abandoned. After a fortnight, when the mare had recovered from this first attempt she was cast. The flank was opened and the abdominal cavity entered. But the growth was so enormous that it would have required such a large incision that ventral hernia, a true eventration, would have been possible. It was then decided to simply divide the peduncle. This was done with the ecraseur and the tumor left free, dropped among the intestinal circumvolutions. The abdomen was then closed with sutures. The animal made an excellent recovery and was sold for a very high price afterward.—(*Journ. de Zootech.*)

DOG BITTEN BY VIPER [*Dr. Bianchi*].—Running about through woods, a dog must have been bitten, and refusing to walk, had to be carried home in a wheel barrow. After a few hours, he had quite a large swelling on the right fore paw with ecchymotic colorations and swelling of the sub-maxillary region. He also had another in the axilla and one on the left shoulder. He was very restless, moaned constantly, had great thirst, vomited by intervals and had abundant salivation. Towards the afternoon of the same day, his condition grew worse; laying on his side, he had repeated jerkings of the body, hurried breathing, weak heart pulsations, eyes dull. 10 c.c. of Calmette serum were injected, followed by another injection one hour after. Then only slow improvement is noticed. The next day, an injection of camphorated oil was given and renewed 24 hours after. Improvement continues. The skin of the paw burst open and black sanious blood oozed out. Soreness and lameness lasted for several days after. It took two weeks for the recovery to be complete.—(*Bullet. Sciences Veter. de Lyon.*)

THREADED NEEDLE IMPLANTED IN THE LARYNX AND PHARYNX [*Mr. Brion, 4th year student*].—Nine-year-old watch dog refuses his food, saliva flows in abundance from his mouth and he vomits everything he tries to swallow. There is a warm and painful swelling of the intermaxillary space. Nothing abnormal is detected in the mouth. Peripharyngeal abscess is suspected. A blister is applied over the diseased region. The condition does not improve. The abscess does not come to fluctuation. Towards the fifth day the swelling subsides, the saliva has a very putrid odor, the general condition becomes alarming and the following day the dog dies. *Post mortem*: Abdominal viscera are congested. Thoracic cavity contains a large quantity of sero-bloody effusion. Right heart is dilated. Round the pharynx there is an abscess containing greenish fetid pus. The tongue has necrotic spots at its base. At the entrance of the larynx, there is implanted in the aryteno-epiglottic fold of the mucous membrane a needle carrying 25 centimeters of thread and resting with its point on the postero-lateral wall of the pharynx. The position of this foreign body rendered all surgical interference useless as well as difficult.—(*Journ. de Zootech.*)

CHRONIC INGUINAL HERNIA IN A SLUT—RETENTION OF FŒTUS—HYSTERECTOMY—RECOVERY [*Prof. Adjunct Charmoy*].—Gordon setter bitch, eight years old, had a swelling in the right groin, existing since four years. It has grown and is now bigger than the fist of a man. It has all the characters of a chronic inguinal hernia. Since a few days the slut is dull, has fever, poor appetite and seems to have pains. There is hypersensibility of the region, and a hard, elongated body is felt in its depth. The animal is anaesthetised with morphine and chloroform, the region is disinfected, the skin incised and the hernial sac isolated. On account of old adhesions it is difficult to reduce and it is necessary to open it freely to complete this step of the operation. The body of the uterus and part of the uterine horns form the contents of the hernia. One of the horns forms an ovoid tumor. The ablation of the uterus and horns is decided and performed. Their mass weighed 385 grammes. On examining them afterwards, remains of a fœtus were found in the cavity of the horn. Ultimate recovery was uneventful.—(*Rec. de Med. Veter.*)

ARMY VETERINARY DEPARTMENT.

THE ATTITUDE OF THE WAR DEPARTMENT TO THE ARMY VETERINARY SERVICE BILL

(H. R. 4541).

STATEMENT OF MAJOR GENERAL WOTHERSPOON, CHIEF OF THE
GENERAL STAFF, UNITED STATES ARMY, BEFORE
THE SUB-COMMITTEE OF THE MILITARY
COMMITTEE OF THE SENATE.

Doubtless the weightiest point in favor of the Army Veterinary Service Bill (H. R. 4541) from the time it was introduced in the House of Representatives by Mr. Hay of Virginia May 1, 1913, up to the present moment has been that it is unequivocally supported by the War Department. We have known that from the start and it has been not only a comfort and delight to us but also it has given our energies displayed in work for the passage of the bill a voltage and a lilt that they have never had before. Still we have never in this campaign placed too much reliance in ostensible support from that source and have reserved an opinion that it might be possible or at least a fear, judging from bitter experiences of the past, that it might be possible that that support was not all sincere. Our fears were dispersed, as far as the attitude of the highest ranking officer of the army is concerned, when he appeared before the Sub-Committee of the Senate Committee on Military Affairs, when called upon for testimony by that body, and was interrogated as follows:

GARRISON STEELE, M.D., D.V.M.

ARMY VETERINARY SERVICE.*

THURSDAY, JUNE 4, 1914.

Sub-Committee of the
Committee on Military Affairs,
United States Senate,
Washington, D. C.

The Sub-Committee met at 2.30 o'clock p. m.

Present—Senators Lea (chairman), Hitchcock, and Catron.

* Hearing before the Sub-Committee of the Committee on Military Affairs, U. S. Senate, 63d Congress, 2d Session, on S. 4331.

*STATEMENT OF MAJ. GEN. WILLIAM W. WOTHERSPOON, CHIEF
OF THE GENERAL STAFF, UNITED STATES ARMY.*

Senator Lea—Gen. Wotherspoon, we wish to have the benefit of your views upon the bill 4331, introduced by Senator Kern, to consolidate the veterinary service of the United States Army, and to increase its efficiency.

Gen. Wotherspoon—The bill is an excellent one.

Senator Lea—Give us your views upon it.

Gen. Wotherspoon—It provides for a corps of veterinarians, and makes their position in the service permanent, which they are not now, and provides for promotion after a service of five years to the grade of first lieutenant, and after 15 years, to the grade of captain. It provides also that after a period of faithful and efficient service they shall be placed on the retired list. It really makes them commissioned officers, by and with the consent of the Senate.

Senator Catron—You think that is advisable, do you?

Gen. Wotherspoon—I do. There is a certain element in the bill which might work to the disadvantage of the line officer, in that it provides, as the existing law does for the Medical Corps, that after a period of service, they shall have a higher grade, while the line officer has to wait for a vacancy. For instance, I was for 20 years a lieutenant, and if I had been a veterinarian, and this law in force, I would have been a captain, under the provisions of this bill, in 15 years.

Senator Lea—I understand that veterinarians have such status in most of the European armies.

Gen. Wotherspoon—Yes; they have a very high status over there.

Senator Catron—Senator Lea asked you if they have such status as this bill provides for. That is what I understood you to mean, Senator.

Senator Lea—Yes; if they have a status equivalent to that of commissioned officers in European armies.

Gen. Wotherspoon—Yes; in nearly all European armies, and they are looked up to as a scientific corps.

Senator Lea—Senator Catron and myself were inclined to criticize this bill in that there was no specific provision for the duties of these veterinarians when they were made officers. What have you to say about that?

Gen. Wotherspoon—I think that is sufficiently provided for when you say here they shall be with the regiments of Artillery and Cavalry, and inspectors of horses and mules, and inspectors of meat.

Senator Catron—Another thing that I think Senator Lea and I agreed on is that this bill does not define their authority as well as their duties—what authority they could exercise in these matters in a command.

Gen. Wotherspoon—They are placed very much in the same position as the Dental Corps, whose duties are defined, but whose status in relation to others is not defined except by general regulation. They would have all the respect paid to them and have all the emoluments of their rank, and exercise authority over those under their own jurisdiction; that is to say, the stable sergeants and the stable orderlies, and the attendants in veterinary hospitals would be under them. That is a mere matter of regulation.

Senator Lea—We regard this measure as quite a radical step, and we did not want to take any action upon it without having the views of the Chief of Staff.

Senator Catron—Do you think that if the veterinarian in examining or looking over the horses of a regiment should find some of them needed treatment, he would not have the right, independent of the colonel or of the commanding officer of the corps, to send those horses off to the hospital, or whatever you might call it?

Gen. Wotherspoon—No, sir; he would have power only to recommend, and then the colonel would have the final action on it. He could recommend

their transfer or isolation, which would be the principal thing in the case of glanders.

Senator Catron—Do you not think he ought to have more power than merely to make a recommendation?

Gen. Wotherspoon—No, sir.

Senator Catron—He would be conflicting with the commanding officer's power. In the case of glanders he ought to have the power to take those horses out of there. Sometimes you get a commanding officer who is not altogether human, either.

Gen. Wotherspoon—The comptroller charges up the value of the animals destroyed contrary to law, and he would be responsible for their death unless they were treated and killed according to the law and regulations.

Senator Catron—My idea was that we ought to leave it until it got to the auditor, but that he ought to have the power to do that in any event, if anybody stood in the way of his doing it. My idea about it is that the corps is an absolutely necessary thing, and that these men should be given all the power that they need to enable them to exercise their professional calling in the place where they are put.

Gen. Wotherspoon—I do not think that the duties of medical officers serving with the troops are defined any more clearly than this, they attend the sick, and they can not do this and can not do that without the consent and approval of the commanding officer, which always is given, of course. Never, in all my service, have I seen any question about it.

Senator Catron—Do you believe this bill would work?

Gen. Wotherspoon—Yes, sir; I believe the bill would work.

Senator Catron—So far as those features are concerned?

Gen. Wotherspoon—Yes.

Senator Catron—And without creating any friction anywhere?

Gen. Wotherspoon—Without creating any friction.

Senator Lea—How much would this bill, if enacted into law, increase the cost of the Veterinary Corps?

Gen. Wotherspoon—I have here a statement that in 1913 the cost was about \$141,000.

Senator Catron—You mean the total cost of it; and that will be increased?

Gen. Wotherspoon—That is June 10, 1913. The total cost of the organization, not considering temporary or emergency employment, is \$141,000. The cost under House bill 4541, which is practically the same as the bill here, is about \$172,000.

Senator Hitchcock—What does the increase consist of?

Gen. Wotherspoon—The cost of the present organization, as stated June 10, 1913, not considering temporary emergency employment, was for 5 animal inspectors and 5 meat inspectors, at \$1,800 per annum, \$18,000; 42 veterinarians, at \$1,700 each, \$81,400; and for light, heat, quarters, and forage, \$26,000; 13 veterinarians, at \$1,200 each, \$15,600; total, \$141,000.

Senator Catron—How many are there of the veterinarians; what is the total of those you have enumerated just now?

Gen. Wotherspoon—There would be 65. There would be some temporary ones. The total number would be 62.

Senator Lea—As I understand, they are contract employees?

Gen. Wotherspoon—Yes.

Senator Hitchcock—The total number would be 62?

Gen. Wotherspoon—Yes.

Senator Hitchcock—And in addition to that, what does it provide? I want to see, because we are increasing from \$141,000 a year to \$172,000 a year.

Gen. Wotherspoon—The bill states the number of veterinarians. The cost of the total number is \$141,000. The cost of the veterinary corps under this bill varies from a minimum number of 62 with 5 years' service to a maximum of 62 veterinarians with 20 years' service; that would be with what we call the fogey pay for length of service.

Senator Catron—There never would be that many, as a matter of fact?

Gen. Witherspoon—There never would be that many with 20 years' service. That would make it from \$141,000 to \$208,322, or an average of \$166,860 per annum, and the difference is undoubtedly in the additional pay that comes from length of service as commissioned officers.

Senator Catron—There is a difference in the fact that the commissioned officer gets more to start with?

Gen. Witherspoon—Yes; he gets more to start with.

Senator Hitchcock—Is there now any difficulty in getting good veterinarians under the present conditions?

Gen. Witherspoon—*Some of those we get are not good. Men will not stay when they have marked ability. The pay is too small for them.*

Senator Catron—*If they were made officers, such as this bill contemplates, do you think you would get first-class men?*

Gen. Witherspoon—*I think so; yes, sir.*

Senator Hitchcock—Is there serious objection to taking men out of civil life and civil employment, and making them part of the official rank in the Army?

Gen. Witherspoon—Well, we have always had contract doctors—acting assistant surgeons.

Senator Catron—Medical men, doctors, were taken out of civil life to start with.

Gen. Witherspoon—Yes; but we always have had a class in the Army, up to recent years, known as contract doctors, who were not commissioned. They got a pay of \$125 a month.

Senator Catron—They would correspond in one respect to these contract surgeons as they are here?

Gen. Witherspoon—Yes; as they are now.

Senator Catron—Senator Hitchcock's suggestion was taking these men and making officers of them. I do not know whether I understand you correctly, Senator?

Senator Hitchcock—There is a constant clamor at every session to add some one of the other class of professional men or tradesmen to the Army and to give them official rank.

Senator Catron—Yes.

Senator Hitchcock—The dentists want it; physicians want it; veterinarians want it. I do not know but what the opticians want it. They all want to get in on Uncle Sam's pay roll, with the prospect of promotion and ultimate retirement, and it seems a bad mixture of the civil with the military. I have been opposed to it. It always means extra expense. I wanted to ask Gen. Witherspoon whether there was any added efficiency which would be created by this bill?

Senator Lea—Your question was whether we would get additional value for the added expense?

Gen. Witherspoon—The only value that I can see in it is that you *would get very much better men, and that is a very strong consideration.* With the strong inducements of additional pay and the right to retirement, you would get better men. It is a big bill to pay, I admit, for additional efficiency.

Senator Lea—Testimony was given the other day that the experience in the English Army had been that there was a tremendous saving in the purchase and care of horses and live stock as the result of a reorganization of the veterinary service and making the veterinarians commissioned officers. Do you believe that to be true?

Gen. Witherspoon—I would take that with a great deal of salt, because I think that is in the nature of special pleading. No one could say how many animals would be saved by this, or how much efficiency of business would be gained.

Senator Lea—I think it was Dr. Hoskins, who is interested in the passage of this legislation, who told us that the losses of the English Army during

the Boer War had been tremendous on account of inferior horses and lack of knowledge of how to care for them, and they had some statistics showing an enormous saving in the English Army in the purchase of horses and otherwise that resulted from the making of these veterinarians officers. What I want to know is whether you know anything of those statistics, whether they are in existence, and whether you believe them.

Gen. Wotherspoon—I should doubt them very much; that is, to the extent that they claim. Undoubtedly you have better judgment at a higher price and a more efficient man; but to grade it down and say how many horses were lost or saved from the fact that it was an indifferent or a highly trained veterinarian that inspected them, I doubt whether anyone could reach any such conclusion.

Senator Catron—Here is what Dr. Hoskins said:

“The Boer War cost England \$76,000,000 in useless, unnecessary loss—I will not say useless, but unnecessary loss—of horses because of the lack of authority of the veterinarians. They have given them authority since the Boer War.”

Senator Hitchcock—How many horses have we in the Cavalry?

Gen. Wotherspoon—About 14,000.

Senator Hitchcock—Can you tell about how many there are in the Artillery?

Gen. Wotherspoon—About 4,400.

Senator Hitchcock—Are those all the horses that these veterinarians have the care of, or are there a number of horses used by the Quartermaster's Department?

Gen. Wotherspoon—There are quite a number of them in the Quartermaster Service. Without having a table I could not tell you.

Senator Hitchcock—Are there 2,000?

Gen. Wotherspoon—I should say nearer 3,000.

Note—There are 4,093 horses in the Quartermaster, Medical, Engineer, and Signal Corps.

Senator Catron—Are those animals all horses or are some of them mules?

Gen. Wotherspoon—These are horses for the men of the machine guns, detachments of the regiments, draft purposes, etc.

Senator Hitchcock—They all have to have veterinarians, of course?

Gen. Wotherspoon—Yes.

Senator Lea—In round numbers, all together, 25,000?

Gen. Wotherspoon—I should say 25,000, because the Signal Corps and the Engineers would come in there.

Note—The total number of horses in the Army is 22,522.

Senator Catron—In addition to them, how many mules or other draft animals would you have?

Gen. Wotherspoon—About 13,000.

Senator Hitchcock—There are 25,000 mules?

Gen. Wotherspoon—No. These figures are not in my mind; they are all in the Quartermaster's tables that I have to refer to; but I should think there are 13,000 mules.

Senator Hitchcock—Thirteen thousand mules?

Gen. Wotherspoon—Yes.

Senator Hitchcock—You are strong on mules, in addition to this many horses.

Gen. Wotherspoon—Each troop of Cavalry has mules to haul its wagons. I should like you to take those figures with a great deal of salt.

Senator Lea—Could you get those figures and send them to us to be embodied in the hearing?

Gen. Wotherspoon—Yes.

Senator Lea—You could give us the total number of animals?

Gen. Wotherspoon—Yes.

(The statement referred to is as follows:)

Horses with Cavalry regiments (public).....	13,400
Owned by Cavalry officers.....	645
Total.....	14,045
Horses with six regiments Artillery.....	4,114
Owned by Artillery officers.....	159
With Artillery detachment at West Point.....	111
Total.....	4,384
Riding horses with Infantry, Signal Corps, Ambulance Companies, Field Hospitals, and Engineers.....	1,691
Owned by Infantry, Signal Corps, Engineer, Hospital Corps, and field hospital officers.....	731
Total.....	2,422
Draft horses at Coast Artillery posts, independent stations, etc.....	1,671
Total horses in the Army.....	22,522
Mules in the Army:	
Draft mules	7,597
Riding mules	645
Pack mules	2,655
Total.....	10,897

This department purchases annually 10 per cent. of allowance of horses for United States and 20 per cent. of allowance of horses for Philippine Islands to replace unserviceable animals.

During the past five fiscal years the following animals have been purchased:

Fiscal Year.	Horses.					Mules.		
	Cavalry.	Artillery.	Riding.	Young.	Draft.	Draft.	Pack.	Riding.
1910.....	1,241	394	408	962	127	754	339	85
1911.....	983	124	161	1,681	13	787	344	42
1912.....	481	73	....	1,700	5	507	260	28
1913.....	1,070	31	....	1,331	27	908	230	87
1914.....	2,300	990	258	631	17	1,181	294	....

Senator Hitchcock—That would indicate that we have about half as many horses and mules as we have men.

Gen. Wotherspoon—In the War of 1861 to 1865 statistics show that we had an animal to every 1¾ men and a wagon to every 27 men. These are enormous figures. We had nearly a million men, of course.

Senator Hitchcock—What has Germany done in the matter of attaching professional men to the Army? Have they been given rank?

Gen. Wotherspoon—I think they have been given rank; yes. The members of the first three classes named are officers without military rank, the highest with the rank of councilor, civil grade, of the fourth class. They are termed military officials. They are field officers. They have field and company rank.

Senator Hitchcock—Do they have rank equal to the rank provided in this bill, that of second lieutenant?

Gen. Wotherspoon—They have rank as field officers, as major, and as company officers, captains, first lieutenants. That is higher rank than we have.

Senator Hitchcock—What is the highest rank provided for in this bill?

Gen. Wotherspoon—Captain.

Senator Hitchcock—That means that all of these veterinarians who get an official rank are entitled to be retired when they reach the age of 62 years?

Gen. Wotherspoon—Sixty-four, or when they become disabled in active service by reason of wounds or disease contracted in the line of duty.

Senator Hitchcock—And that means that there will be a number of them on the retired list?

Gen. Wotherspoon—Yes; it will tend to increase the retired list.

Senator Hitchcock—In other words, they will be acting as veterinarians in their own communities and drawing retired pay from Uncle Sam?

Gen. Wotherspoon—That is very apt to be so.

Senator Hitchcock—That is about what it means.

Gen. Wotherspoon—They would not be exposed to the fatigues and strains of field service after that time. It is like a retired doctor who gets a private practice.

Senator Hitchcock—Under the terms of this bill, at what age could a man enter the service?

Gen. Wotherspoon—Between 21 and 27.

Senator Hitchcock—Is that the greatest age at which he could enter?

Gen. Wotherspoon—That is the greatest age. It provides as follows:

“That hereafter a candidate for appointment as assistant veterinarian must be a citizen of the United States, between the ages of 21 and 27 years.”

Senator Catron—That is for the first organization of the corps?

Gen. Wotherspoon—Yes.

Senator Hitchcock—At the present time have you any idea what the maximum ages are of veterinarians attached to the Army?

Gen. Wotherspoon—No, sir; I do not know that.

Senator Hitchcock—There may be some already approaching the age of retirement?

Gen. Wotherspoon—There may be some. Gen. Aleshire can give the committee all that information.

Senator Catron—What proportion of the officers of the Army reach the retiring age, or retire?

Gen. Wotherspoon—I could not give you those figures, but quite a small percentage of the total number of officers are retired.

Senator Catron—That is what I meant.

Gen. Wotherspoon—It is a small number who reach the age of 64.

Senator Catron—Or are retired on account of other causes?

Gen. Wotherspoon—Yes. Unfortunately as the result of the Spanish War there have been a great many retirements of comparatively young men, due probably to relaxation of the physical examinations when they entered, for one thing, and to great exposure in the Philippines and in Cuba, for another.

Senator Hitchcock—Is the proportion of men who reach the age of retirement in the Army greater than would be indicated by the actuary tables of insurance companies?

Gen. Wotherspoon—I think it is less than the actuary tables.

Senator Hitchcock—Less?

Gen. Wotherspoon—Yes; because we have the additional risks. As a matter of fact, very few insurance companies will take officers of the Army. They are not good risks, on account of climatic exposure. I cannot get any insurance if I go to the Philippines or to Panama, except by paying extraordinary premiums.

They seem to pay very little attention to the danger from wounds.

Senator Catron—Take this veterinary corps that it is proposed to organize, and supposing that the bill had been in operation 20 years, about how many men do you think might be on the retired list? Can you form any judgment about how many there would be out of the 62?

Gen. Wotherspoon—I should say about six or seven, at a rough guess.

Senator Hitchcock—*Does the War Department now recommend the passage of this bill?*

Gen. Wotherspoon—*The War Department does, yes; and I do, too. I think it is a good bill.*

Senator Hitchcock—Is not that a new thing for the War Department to do?

Gen. Wotherspoon—The original date of their recommendation was 1912. It started in March, 1912.

Senator Lea—I understand that the department estimates that the cost of the average is \$41,000 more a year for the organization of the corps under this bill, but the department thinks that it will increase the efficiency of the veterinary service more than enough to offset that amount.

Gen. Wotherspoon—That is the allegation of the War Department, and it is justified to a certain degree by the results that you will get from the examination of horses when they originally come into the service, and the care put on them after you get them in.

Senator Catron—You mean that by the additional efficiency there will be that much saved actually by this organization of the service; because of the examination of horses when they enter and the care taken of them so that there will not have to be so many thrown away?

Gen. Wotherspoon—Yes.

Senator Catron—You want to get good men in the veterinary service; and, second, you want to hold them in the service after they develop into good men; is that true?

Gen. Wotherspoon—Yes. *We have had this case which has come under my own observation since I have been Chief of Staff. Two of the most efficient veterinarians that we have had, men who have proved themselves, have applied to go to the veterinary schools; one in Philadelphia and one in Ithaca, I believe. At any rate, they are veterinary schools of a very high class. There is no doubt in my mind that when those men are graduated there and get their diplomas, we are liable to lose them.*

Senator Hitchcock—They will set up in business for themselves?

Gen. Wotherspoon—Yes.

Senator Catron—Do you think if the allowance was made for giving them rank we would get such men as that?

Gen. Wotherspoon—Yes; if you give them rank as officers.

Senator Catron—Yes; but I understand you have all grades, running from No. 1 down through the number of men you have in the class and they may be lower in some respects than others. Do you think you would get the best class of those who actually graduate?

Gen. Wotherspoon—I think we would.

Senator Catron—*The pick of them; that is what I mean to say.*

Gen. Wotherspoon—*Yes; we would get the pick of those men, just as we get the pick of the dentists.*

Gen. Wotherspoon—These veterinarians do a great deal of meat inspection for the Army, and probably it would be interesting to the committee to know how much meat they inspect.

Senator Hitchcock—That is something we do not know anything about.

Gen. Wotherspoon—One class of these veterinarians go to the butchers and inspect the meat that is used by the Army. That used to be done under the old system by the Quartermaster's Department, but these men now inspect the meat to see that it is not injurious to health. They take the place

of the Agricultural Department in the meat inspection for the Army. All meat that is served to the Army is inspected by this veterinary corps.

Senator Hitchcock—Does not the Army purchase meat that has already passed under Government inspection?

Gen. Wotherspoon—Yes; but where there is not a regular inspector they inspect it, and in some cases they inspect it even where there are inspectors.

Senator Hitchcock—They make a microscopic inspection?

Gen. Wotherspoon—I do not know. They can tell a tuberculous cow some way or other. *I never saw such astonishing things as they can do. They can pick up a piece of meat and tell you whether it is from a cow or a bull or a steer, and whether it is three years old or four years old or five years old, etc.*

THE "PURPLE CROSS," AN AID SOCIETY FOR HORSES IN WAR.

The "Purple Cross Society," founded in England towards the end of the Boer War, to relieve the suffering or wounded horses on the battlefield by mercifully destroying them, has recently been heard of again.

This society endeavored several times to have its charter ratified by the Geneva Convention, but without avail. Its last attempt at recognition was made in 1912 at the London Peace Congress, when the Society presented a petition: "To extend the protective provisions of the Geneva Convention regarding surgeons, nurses, chaplains, etc., also to those non-combatants who may visit the battlefield to relieve or put to an end the suffering of wounded horses and other animals employed in warfare; and that the British Government be requested to invite the other powers to widen the terms of the Geneva Convention so as to protect the veterinary surgeon, the horse ambulance and such voluntary aid societies as may be recognized by the governments."

This petition was indorsed by the foremost societies for the prevention of cruelty to animals in a number of European countries. It was also presented to the President of the United States. High-minded and humanitarian as is the aim of the Purple Cross Society, it did not find favor with the War Departments of the European Powers. Not that its lofty spirit was misunderstood, but military experts objected on practical grounds, arguing that the personell and the horse ambulances of the "Purple Cross" would seriously interfere with the rights and practices of the "Red Cross," and that the activity of an additional aid society in the field would endanger the freedom of military tactics.

Naturally, the veterinary officers of the European armies

avored the provisions of the Purple Cross, as it would secure for them a protection similar to that bestowed by the Red Cross, particularly an exemption from capture by the enemy, which they do not now enjoy. But they bowed to the decision of the military authorities.

When suddenly the European War broke out, the Purple Cross Society promptly offered its services. These were declined as superfluous. It was pointed out to the Society that all the armies engaged in the present war had regular Veterinary Corps, the members of which were duly commissioned officers invested with authority, assisted by trained farriers in sufficient numbers to attend to the wounded horses; that these corps had ample provisions for veterinary field service, including ambulances and field veterinary hospitals; and that therefore these corps were fully able to perform the humanitarian services aimed at by the Purple Cross.

We doubt that this statement is correct in all of its parts. We have been with wounded horses in war. Aside from the veterinary field hospitals which are necessarily located in the rear of the contesting armies, the veterinarians accompany the mounted troops into action in order to be on hand for such emergency treatment of horses as can be applied at once. During a victorious advance the veterinarians may be able to attend quite soon to the wounded horses left straggling on the battlefield; but during a retreat they must follow the troops to which they belong, and they are directed to abandon the wounded animals. These are left to the mercy of the enemy, who may or may not have the time to attend to them in the cruel pursuit of destroying the opposing forces.

Whatever parts of the statement of the military experts may be true as regards the European army veterinary services, none of them holds good for our own army. We have no veterinary corps, no commissioned veterinary officers with professional authority, no veterinary field equipment such as is furnished abroad. Consequently our Government could give no assurance of a merciful treatment of our army horses in war, such as the Purple Cross or other humanitarian societies desire to see instituted.

Yet, war may come upon us. Those of us who are "on watch on the Rio Grande," hope with the rest of the American people that the horrors and sins of war may be spared us. Often enough, however, it has seemed that only a spark were needed to kindle the flames. Should this happen, our army veterinarians would

be no better provided for actual field service than they were in the Cuban and Philippine campaigns. We all know what their veterinary record has been. Not a particle of humanitarian spirit would be shown to our horses, well or wounded, in the next war. The usual attention given to them is based entirely on economic grounds, *i. e.*, the ruthless practice of saving those that are still serviceable and abandon those that are unfit.

In spite of continuous and courageous efforts from within our profession, which is a humane profession, we have not progressed one iota during the last fifteen years towards a higher spirit in the army veterinary service, held down, as we were, by the objection of stubborn, uninterested and uninformed outsiders. It would be a proud day for us, could success crown our efforts during this time of peace in our land, instead of waiting for the next lesson of the next war to help us to attain the necessary reform of our veterinary service, which sorely needs a lift to a higher plane.

OLAF SCHWARZKOPF.

LARGE ENROLLMENT IN VETERINARY COLLEGE.—The enrollment of 49 students, against 32 last year, speaks volumes for the quality of work and reputation already reached by the four years' course recently established in veterinary science. In order to take care of this increase in students, many changes have been necessary. The old clinic room in the L of the building has been changed into an anatomical laboratory, where all the dissecting work will be done. The entire second story has been made into one large laboratory, with all new desks, and is fitted up for work in pharmacy and microscopic anatomy. All the clinic work will be taken care of in the fine new building soon to be completed and an account of which will appear in the RECORD at an early date.

With the new equipment and building, this college (Mich. Agr. Coll.—Div. Veterinary Science) will hold a position among the first three veterinary colleges in the United States. It is the only one east of the Mississippi that gives a four-year course and, with one exception, the only one that demands high school graduates as matriculants.—(*Clipping from an East Lansing Daily.*)

A NEW AMERICAN HORSE.—We learn from a foreign publication that the United States Government, in its scientific horse breeding pursuits, "will produce a new heavy horse, which they have already prenately christened the Amgrey."—(*Rider and Driver.*)

CORRESPONDENCE.

PREVALENCE OF RABIES.

GLENS FALLS, N. Y., November 16, 1914.

To Editor AMERICAN VETERINARY REVIEW, New York:

We have had quite an epidemic of rabies in this and adjoining towns.

Several persons have been bitten and have taken Pasteur treatment. I was scratched by a rabid dog early in April of this year and took treatment. Since then I have had some fifteen or twenty cases of rabies in dogs and three or four cases in cattle.

To-day I was called to see a hunting dog suffering from furious rabies and shot him before he did any damage.

I have sent many heads to Cornell for diagnosis and all have been positive.

The authorities here do not enforce the quarantine and the citizens consider the muzzling of dogs a fake and the quarantine instituted for the grafters' benefit.

The way things are going rabies will exist for an indefinite time and some fine day after some person has died of this dread disease, perhaps the people will wake up.

Many medical men and a great majority of the laity do not believe in any such thing as rabies and many is the warm argument I have had with them on this subject.

I wish some reader of the REVIEW or the Editor might come to my rescue via an article in the AMERICAN VETERINARY REVIEW. I would give it to our local papers for reprint.

I am not looking for notoriety or graft, but I think it my duty to do all I can to protect the public even if they do not appreciate it.

Yours truly,

H. C. MURRAY.

A FRIEND IN NEED.

CHICAGO, ILL., Nov. 7, 1914.

We were in Paris. We were strangers and those who look after tourists "took us in" but not strictly in biblical sense.

In fact we were "taken in" so frequently that we began to get shy. We had taken one of the swift river boats up or down the Seine, I don't know which, to Alfort. It was vacation at this famous veterinary school. No arrangements had been made to receive us, so we did not get a very favorable impression of this excellent old school, although some students who spoke English were very kind and showed us the grounds of the outside of the buildings. Then we went to the Pasteur Institute and saw the magnificent tomb of the great savant and were walked through some of the laboratories by the janitor who exhibited a trained ape that could pass a tin cup to visitors in a very suggestive way. Still we were disappointed from a professional point of view.

While Dr. Ackerman and I were visiting Dr. Liautard, we mentioned this and the good doctor proceeded to give us a letter of introduction to his friend Dr. Evens, a prominent veterinarian of Paris. Just as soon as we got back to the city we proceeded to the doctor's office—that is, we intended to. It was located in the street Monsieur le Prince and as we labored under the delusion that Monsieur le Prince was a man, we were not looking for, it was not until we resigned ourselves to the gesticulations and imprecations of a taxicab driver that we reached the right place at last.

I shall not attempt to describe the cordial hearty greeting Dr. Evens gave us. While his knowledge of English was much greater than our knowledge of French, it was hardly equal to the occasion, but his elegant Spanish helped us out. We had a delightful visit and indicated to the doctor our desire to see the municipal abattoir and the Pasteur farm where the biological preparations are made. Dr. Evens enquired the number in our party and asked that we leave the rest to him.

Dr. De Vine has told you what a splendid trip Dr. Evens gave us to these interesting places and he would not consider for a moment our desire to pay for the automobiles. The doctor also invited us to dine with him the following evening at the restaurant Laperouse.

To those who do not know Paris it should be explained that the restaurant Laperouse was established upon the bank of the Seine some 250 years ago. While it is not the most magnificent it is probably the most famous restaurant of Paris. The doctor assured us that the most noted diplomats and scientists of the world had dined there, for the fame of its cuisine and wines is known in all parts of the world.

I can't tell you all about that dinner. I don't remember whether imported Canadian lobsters came first or whether it was some rare old wine. I recall how the portly master of the wine cellar looked in his long black gown, such as the chiefs of this wine cellar had always worn, with jingling keys at his waist as he opened the bottles of rare wines for the doctor's inspection; for the doctor is a connoisseur in good things to eat and drink. I can see the doctor now as he lifted the glass of rare wine to the light or tested for the bouquet or flavor.

After all the good things to eat and drink there were fine Havana cigars and toasts and speeches. I remember the speeches, particularly the eloquent one of Dr. De Vine and the lobster joke of Dr. Blattenberg, because I couldn't translate either the eloquence or the joke into Spanish. And so the pleasant hours passed. The writer has eaten a few mighty good dinners in his life but the dinner given by Dr. Evens to us as representatives of the North American veterinarians was the climax. We voted Dr. Evens the prince of good fellows, for a more genial host never lifted his glass to a friend.

Little did we think as we said "*Adios, hasta luego*" (good-bye until we meet again) that it might be for long, because we expected to meet him at the convention in London and we planned on our way back to the hotel to give Dr. Evens the best dinner London afforded if we had to pawn our watches and come home steered to raise the funds to do it with, but the war upset all plans, for our good friend Dr. Evens was not there.

We can only hope that sometime we may have an opportunity to repay in a feeble way his generous hospitality, not to us as individuals, but as representing the profession in America.

N. S. MAYO.

VETERINARIANS TO ESTABLISH HOG CHOLERA SERUM PLANT ON A LARGE SCALE.—A western newspaper announces that a new hog cholera serum company is to be incorporated under the name of the Hamilton Chemical Company with a capital stock of \$60,000 in the city of Nobleville, Indiana. The company to be owned and operated by veterinarians. It states that the plans of the buildings have been completed and 20 acres of land bought. Dr. J. W. Klotz is said to be managing the work. We will probably hear the facts from the doctor later.

BIBLIOGRAPHY.

PRODUCTIVE SWINE HUSBANDRY.

PRODUCTIVE SWINE HUSBANDRY. By George E. Day, B.S.A., Professor of Animal Husbandry, and Farm Superintendent, Ontario Agricultural College, Guelph, Ontario, Canada. More than 300 pages, with 75 illustrations in text. Philadelphia and London: J. B. Lippincott Company.

This work, the product of a man at once scientific and practical, nicely balances both phases of the subject throughout the book. Divided into seven parts it takes up the following seven divisions of the subject: After Part I which is *Introductory*, we find *Principles of Swine Breeding*, *Breeds of Swine*, *Results of Experiments in Swine Feeding*, *Feeding and Management*, *Marketing and Curing*, and finally, *Buildings, Sanitation and Disease*. These seven headings require 35 chapters in which to describe the details of this interesting, nay fascinating, subject, and at the end of each chapter are a number of questions for self-quizzing on the matter just passed over, making the book admirably adapted to the student, while also convenient to the hog raiser, in whose mind the very question may arise that he finds, at the end of some one of the chapters, and he knows that in the chapter immediately preceding, he will find the answer. In Part II the types of swine are carefully considered and generously illustrated; then that fascinating subject (no matter what animal you have under consideration) of breeding and selection, is taken up in Part III. Here, the author says, theory and practice must go hand in hand, and knowledge must be combined with reason; but the really great breeder seems to possess a sort of intuitive genius given to the very few, and hence great breeders are not common. The author fully appreciates the advantages of inbreeding, in careful, intelligent hands, but just as fully appreciates the dangers of it in unskilled hands, and therefore thinks it safer to avoid it. Of course we all realize that nothing would ever have been accomplished in the improvement of the breeds of any animals but for the skillful practice of inbreeding, just as the author does; but like many valuable drugs of a highly potent character, valuable in the hands of the careful clinician and physician, but dangerous in hands of a layman. The clinician may be likened to the carefully trained,

observant breeder, and the layman to a careless, untrained breeder. A great part of the centre of the book is devoted to a study of the breeds of swine, very important and very instructive. The results of investigations and feed experiments is then given, followed by chapters on the various grains, meals and by-products. Pasture and soiling crops then come in for careful consideration, followed by chapters of the preparation of the feed, the management of the boar, and of the sow, and of the young pigs are all extremely interesting chapters. Fattening, marketing and curing follow, and finally, buildings, sanitation and disease complete this excellent work. In short, *Day's Productive Swine Husbandry*, based on scientific principles and worked out in the practical field, is indispensable alike to the student and practitioner of swine culture and reflects the broad knowledge of the subject in both fields, possessed by Prof. Day. Bound in cloth of sepia color and red, with a beautiful colored frontispiece, excellent paper and good type, it is a credit to the publishers and a nice addition to one's library.

THE REPORTS OF THE VETERINARY BACTERIOLOGIST, LL. E. W. BEVAN, AND OF THE CHIEF VETERINARY SURGEON, J. M. SINCLAIR, SOUTHERN RHODESIA, 1913, reached the REVIEW office recently, and are of great interest. The first includes *Examinations of Preparations; African Coast Fever; Plasmoses of Cattle; Horse Sickness; Trypanosomiasis; Accommodation*. The second includes *African Coast Fever; Bovine Plasmosis; Anthrax and Lungsickness (Contagious Pleuropneumonia of Bovines); Black Quarter or Quarter Evil; Tuberculosis; Trypanosomiasis; Rabies; Glanders; Rinderpest; Importation of Stock*. Both of these reports are extremely interesting and instructive and we shall publish parts of them from time to time. The report on glanders is interesting from its brevity, and is as follows: "The Territory remains free from this scourge. During the year the following animals were tested with mallein on importation: Horses, 1,000; mules, 741; donkeys, 2,495. Three horses reacted. Post-mortem examination in each case showed lesions of glanders."

COULD NOT CHANCE REVIEW SUBSCRIPTION EXPIRING.—Michigan veterinarian sent check covering two years in advance with above explanation.

SOCIETY MEETINGS.

VETERINARY MEDICAL ASSOCIATION OF NEW YORK CITY.

OCTOBER MEETING.

The regular monthly meeting of this association, following the summer recess, was held in the main lecture room of the New York-American Veterinary College, October 7, 1914, at 8.30 o'clock.

Before the regular meeting was called to order Dr. R. W. Ellis invited the members and visitors to examine a driving mare of which he gave the following history.

Road mare, developed acute nymphomania in the early part of 1913, horsing continually for three months, switching and kicking when driven. Brought to the college and operated on at Dr. H. D. Gill's surgical clinic, both ovaries being removed. Made a complete recovery and in about three months had gained 60 or 70 pounds and showed no return of the previous symptoms until May, 1914, when she started horsing, with return of all the other conditions.

Dr. Ellis exhibited the ovaries which Dr. Gill had removed in April, 1913, and asked what any of the members could suggest to correct this condition.

Dr. Goubeaud suggested section of the pudic nerve, giving it as his opinion that this operation would be successful.

Dr. DuBois suggested docking and setting up the tail, saying that he had good results in similar cases from this operation.

Dr. J. F. DeVine also stated that he had repeatedly set up tails in horses and mares with good results in stopping switching and kicking. He advocated docking and setting up the tail in this case.

Others suggested the removal of the clitoris.

The regular meeting was then called to order in the lecture room.

The minutes of the June meeting were read and approved.

Dr. Thos. B. Rogers then read a very interesting and scientific paper entitled "The Action of Certain Plants in Sensitizing Non-Pigmented Skin to the Action of the Ultra Violet Rays."

This article indicated that the doctor had given this subject much thought and study as well as a great amount of research work.

Dr. Rogers also demonstrated ovariectomy in a cat.

Drs. Smith and Cochran, delegates to the New York State Veterinary Medical Society, then gave a brief account of the meeting held at Rochester in August of this year, and stated that the next meeting would be held in Ithaca.

Dr. E. B. Ackerman, delegate to the International Veterinary Congress at London, gave a brief account of his European trip and the trials and discomforts the party underwent owing to war conditions.

Mentioned having called on Dr. Liautard with Dr. Mayo, spending the day at the Doctor's country estate in France. Dr. Liautard sent his best wishes to all his friends in this country. Also mentioned how royally Dr. Evens, of Paris, entertained the party. Owing to war operations the Congress adjourned on the second day with every one anxious to return home.

Dr. Blair, who was also a delegate to the Congress, said that he could add but little to what Dr. Ackerman had said, and regretted that what promised to be a splendid Congress had been aborted by the beginning of the war.

The secretary then read a query asking for opinions as to what constitutes overloading of a team.

Dr. Rogers said that a rule obtained in Philadelphia that a team is not overloaded if they can pull the load under the whip.

On motion, seconded and carried, the privilege of the floor was extended to visitors and non-members.

Dr. Ackerman said that in relation to loading he recommended that the maximum load be four times the weight of the animal, exclusive of the vehicle.

The consensus of opinion seemed to be, however, that it is a hard matter to set any hard and fast rule regarding overloading, as it would be necessary to judge each case according to conditions governing the same.

In this opinion Dr. W. H. Kelly, of Albany, who was present, concurred.

Dr. Rogers said that it ought to be the duty of the veterinarian to instruct his clients regarding such matters, so as to obtain the greatest degree of efficiency.

A communication from the National Association Bureau of Animal Industry Employees, in which they asked this associa-

tion for support and co-operation in the passage of the Loebeck-Lewis Bill, was read by the secretary.

On motion by Dr. Ackerman, seconded and carried, this bill was endorsed and the secretary instructed to write our State Senators asking them to support the same.

A unanimous vote of thanks was tendered Dr. Rogers for his valuable contribution to the program of the evening.

Dr. Maffitt Smith then reported for the prosecuting committee, stating that said committee had preferred charges against a member in writing to the secretary, which the secretary stated he had in regular form turned over to the Board of Censors for investigation.

Dr. Griessman then spoke of illegal practitioners testing horses for inter-state work.

Dr. Gill stated that in every case where a rumor of illegal testing came to his knowledge he endeavored to protect the interests of all concerned. Cited one case of this kind in which he secured an affidavit that the one so testing had performed the same in a legal manner. Also stated that he had personally interviewed several veterinarians and pointed out the error of their ways with good results.

Cited another case in which the veterinarian making the tests is said to be a non-registered man. Dr. Gill wrote, inviting him to produce proof of his registration, but up to the present time has had no answer.

Also said that it is his intention to have every horse in Greater New York tested, as well as any that may come in from other states.

Dr. T. E. Smith said that Dr. Gill had done a vast amount of work along this line during the past few months and deserved the help and support of all the profession.

Also advocated the education of the public as to having testing done, and stated that in his opinion glanders will be eradicated from the Middle Atlantic States in the course of three or four years.

At this point Dr. Smith told a story which served to break the monotony of the discussion and improve the spirits of all present.

Dr. Ackerman also spoke highly of the work being done by Dr. Gill, and said that he was heartily in accord with the effort made.

Dr. Ackerman moved that a committee be appointed to recommend a list of qualified veterinarians to the State Department of

Agriculture, whose tests should be recognized. Dr. M. Smith offered as an amendment that the Board of Censors act in this capacity.

Dr. Ackerman accepted the amendment and the motion as amended was unanimously carried.

Dr. Gill brought up the matter of Dr. Serling, and asked the association what, in their opinion, should be done in this case.

After some discussion, Dr. T. E. Smith moved that when any committee or member of this association produced proof that Dr. Serling, Sr., is making or has made illegal tests that said tests be not honored by the State Department of Agriculture—carried.

Dr. Ackerman stated that he had appeared before the Committee on Grades and Salaries of the Board of Estimate and Apportionment, and at that time they expressed a desire for the opinion of this association as to what should qualify a veterinarian as an applicant for a civil service position. Also requested that the secretary write Mr. Geo. L. Terrell, secretary of this committee asking if they still desired the opinion of this association.

Mr. Morse requested and was granted the privilege of the floor. He stated that Bowen had been before two Grand Juries, who had failed to indict him.

He suggested that a change of venue would surely result in an indictment.

He asked authority from this association to proceed with this case, but was informed that the prosecuting committee had full power to act.

After some further discussion, no further business appearing, the meeting adjourned.

R. S. MACKELLAR, Secretary.

NOVEMBER MEETING.

The regular monthly meeting of this association was called to order by President McKinney at 8.45 p. m.

The minutes of the October meeting were read and approved.

Dr. R. W. Ellis then gave a very interesting extemporaneous case-report of a dog—a Boston terrier puppy three or four months old which had passed no urine for 3 or 4 days. He attempted to pass catheter but was unsuccessful; then punctured the bladder, with no better results. Post-mortem examination revealed a clot of blood in the bladder enveloping a small cystolith.

Also exhibited bladder of a dog which had died a few hours after having been first seen, and on post mortem the bladder was found to be entirely filled with cystoliths. This was a very remarkable specimen.

The doctor then gave the history of the following case. A female collie three years old has had puppies twice—a year apart—the last time in August of this year. Was discharging pus, which was thought by the owner to be due to the fact of her having had puppies, but the history of passing blood in the urine caused the doctor to make a diagnosis of stone in the bladder, which was confirmed by rectal examination. Experience with the two previous cases prompted the suggestion of an operation.

After extra aseptic precautions and shaving of the abdomen, an incision was made on the median line in front of the pubic symphysis, just as for ovariectomy except that this incision was made nearer to the rim of the pelvis. Bladder was lifted and incised, which brought to light a stone weighing $2\frac{1}{2}$ drams (10 grammes), and measuring $1\frac{1}{8}$ by $1\frac{1}{2}$ inches. Dr. Ellis then exhibited the cystolith. The bladder was then stitched and the external wound closed. Subsequent treatment consisted in irrigating the bladder with chinosol solution—made an uneventful recovery.

This case report was discussed by Drs. Chase, Berns and Gannett, and a great amount of interest was shown by the members and visitors present.

Dr. J. A. McLaughlin then read a paper entitled, "The Organism, Its Division Into Two Separate Structures, Its Secondary Products."

In this paper the doctor again advanced his theory of nutrition and likened the body to a man made machine.

Dr. Kenny (M.D.), who was present, said that he did not agree with Dr. McLaughlin's statement that the animal body is purely mechanical, as each body is a living individual and each cell an entity in itself.

Dr. Kenny discussed this article at some length, and although he did not agree with Dr. McLaughlin's theories in many instances, he said that this subject was worthy of a great deal of study and consideration.

A unanimous vote of thanks was extended to Drs. Ellis, McLaughlin and Kenny for their valuable contributions to the program of the evening.

Dr. D. W. Cochran, Chairman of the Board of Censors, announced that the Censors would meet on Friday, November 13, 1914, in the College building, to consider charges pending against two members.

The Board of Censors also recommended that Dr. Julius Cavazzi, having been convicted of a felony, be expelled from this association.

This recommendation of the Censors, on motion, was unanimously adopted and Dr. Cavazzi declared expelled from membership.

Dr. Griessman moved that a communication be sent to the State Board of Veterinary Examiners, advising them of the action of this association regarding Dr. Cavazzi, and recommending that his license to practice be revoked, seconded and unanimously carried.

An appeal from the Massachusetts Veterinary Association for financial aid in erecting a monument in Washington, D. C., to the memory of Dr. D. E. Salmon, was read by the secretary.

Dr. Gill moved that a post card subscription be used for the purpose of gathering a fund for this worthy purpose, seconded and unanimously carried.

The resignation of Dr. D. J. Mangan, which had been laid on the table since November, 1913, was regretfully accepted.

Dr. Griessman announced the death of Mr. Arthur Rosenberg, counsel for the prosecuting committee of this association.

The secretary was instructed to write a letter of condolence to the family of Mr. Rosenberg.

Dr. Chase mentioned the prevalence of Foot and Mouth Disease and the possibility of its spreading. Suggested that some one familiar with this scourge prepare a paper to be read at the December meeting.

Dr. Gill suggested writing Dr. A. D. Melvin, Chief of the Bureau of Animal Industry, requesting that he designate some member of his staff to present this subject at the next meeting of this association.

Dr. Berns made a motion covering this suggestion of Dr. Gill's, which was seconded and unanimously carried.

Dr. Henry L. Hirscher, whose application for membership was endorsed by a majority of the Board of Censors, was unanimously elected to membership by the secretary casting one ballot.

No further business appearing, meeting adjourned.

ROBT. S. MACKELLAR, Secretary.

MAINE VETERINARY MEDICAL ASSOCIATION.

The quarterly meeting of the M. V. M. A. was held in Lewiston at the DeWitt Hotel, October 14, 1914. The meeting called to order at 7.40 p. m. by the president, Dr. Jervis.

Roll call: Drs. C. L. Blakely, W. H. Corey, C. F. Davis, C. F. Dwinal, E. E. Gibbs, L. K. Green, G. R. Inglis, H. B. F. Jervis, A. Joly, W. H. Lynch, M. E. Maddocks, A. L. Murch, J. A. Ness, C. W. Purcell, W. H. Robinson, E. E. Russell, I. L. Salley, H. L. Stevens, C. W. Watson, G. F. Wescott and H. B. Wescott.

Minutes of the July meeting were read and accepted. Dr. Lynch asked that the minutes of the April meeting be read, which was done by the secretary. The executive committee reported favorably on the applications of Drs. P. R. Baird, of Waterville, and H. T. Paul, of Portsmouth, N. H., and they were successfully balloted upon and elected to membership. The applications of Drs. H. S. Irish, of Westbrook, and J. F. Moran, of Somersworth, N. H., were read and referred to the executive committee.

Dr. W. H. Robinson had the secretary read the resolutions drawn up by the special committee, endorsing the bill before congress in regard to the employees of the B. A. I.

RESOLUTION.

At the quarterly meeting of the Maine Veterinary Medical Association, held at Rockland, July 8, 1914; it was voted to endorse the Lobeck Bill H. R. 9292 and S. 5720.

Be it therefore resolved, That this association do all in its power to promote the passage of this bill in both branches of Congress. That a copy of these resolutions be sent the members of both houses on this committee, a copy be inserted in the records of our meeting and a copy sent to the AMERICAN VETERINARY REVIEW.

Be it further resolved, That the committee send a copy of these resolutions and a letter urging them to use their influence in the passing of this bill to the Representatives and Senators from our State of Maine.

W. H. ROBINSON,
A. JOLY,
W. L. WEST,
Committee.

Dr. Salley presented a resolution to be sent to the Governor-elect, Hon. Oakley C. Curtis, asking him to retain Dr. A. Joly in the office of Live Stock Sanitary Commissioner, which position he has held for the past two years.

RESOLUTION.

To His Excellency, the Governor-elect, OAKLEY C. CURTIS, Portland, Maine:

Whereas, Our Live Stock Sanitary Commissioner, Dr. A. Joly, has performed the duties of his office in a thoroughly scientific and business-like manner; the policy followed in carrying out the enforcement of our sanitary laws in relation with the prevention of contagious diseases among our domestic animals has been the most commendable for the live stock interests of the State of Maine; his administration has been the work of a sanitarian with perfect understanding of the different problems which confront the existing conditions in the State.

Resolved, That we, the members of the Maine Veterinary Medical Association, here assembled in Lewiston, October 14, 1914, at this quarterly meeting, regardless of party affiliations, respectfully request the Governor-elect, Hon. Oakley C. Curtis, to maintain in office our present Live Stock Sanitary Commissioner, Dr. A. Joly, whose services have been efficient and whose administration has been strictly non-partisan.

This resolution was seconded and carried. Dr. Joly thanked the members for this token of esteem.

Guests were: Drs. H. S. Irish, P. R. Baird and Mr. E. S. Cooper.

It was voted to have a box of cigars at each meeting. It was voted that the secretary ask the secretary of the Board of Examiners to furnish the secretary of the State Association with a list of all graduates as soon as they pass the board, so that he might get them to join the association. A legislative committee was voted to be chosen from the floor. The members nominated from the floor to serve on this committee were: Drs. Murch, Joly, Ness, Salley, Blakely and the president, Dr. Jervis. It was voted that this committee have the power to call on any member for assistance and that the association pay all expenses incurred in the legislative work.

Dr. G. R. Inglis, instead of presenting a paper, gave a very interesting account of the work they are doing in Auburn in cleaning up the milk supply. He described the conditions found

on the several farms that have been inspected so far in the campaign. Drs. Corey, Ness, Purcell also talked on this subject and tried to advance some scheme for the association to work on to promote the betterment of tieups and general milk production in regard to good, sanitary, wholesome milk, but after much thrashing of the different arguments it was decided to have every member do what little he can in his own way in this matter. Dr. W. H. Corey was excused from reading on account of ill health.

Dr. L. K. Green, inspector in charge of the Penley abbatoir at Auburn, read a very interesting paper on the *lymph glands of the bovines. Dr. Green laid great stress on the importance of the lymph glands, especially in regard to post-mortem work and on the killing beds. He kindly explained the duties of the veterinarians who work on the killing beds. A rising vote of thanks was extended Dr. Green for his very interesting paper.

Dr. Jervis appointed Drs. Baird, Irish and Corey as speakers for the January meeting. It was voted to hold the next meeting at Augusta. By a vote it was voted to suspend the by-laws and hold the meeting on the 4th Wednesday of January instead of the 2d, as is customry. It was voted to have a banquet and have the ladies as guests. A banquet committee consisting of Drs. Blakely, Maddocks and Joly was appointed by the president. Meeting adjourned at 9.50 p. m.

H. B. WESCOTT, Secretary.

MIDSUMMER MEETING OF THE MICHIGAN AND NORTHWESTERN OHIO STATE VETERINARY MEDICAL ASSOCIATIONS.

Meeting called to order by President A. McKercher at the Hotel Griswold, Detroit, Tuesday, July 7, 1914. A short address of welcome was delivered by Dr. G. W. Dunphy, who referred to the delightful weather and the pleasure of having so many of the ladies and members of the Northwestern Association present. Doctor Dunphy spoke of the very friendly spirit of co-operation existing between the two associations and the advantages gained by uniting in these semi-annual reunions, the exchanging of ideas, increasing enthusiasm, thus creating a de-

* Published in present issue, beginning on page 316.

sire for greater magnitude, the thoughts of which was a great pleasure, especialy to the older members of the profession.

The president then called upon President Eldredge, who, in behalf of members of the Northwestern Ohio Association, thanked the Michigan association for the kind invitation to unite with them at this time, and looked forward to the time when the Ohio Association would be able to entertain them.

Dr. Theodore F. Krey then made the announcements for the afternoon and evening, and Dr. H. M. Gohn, Chairman of the Legislative Committee of the Michigan Association, announced a meeting of said committee immediately upon the arrival at Rochester, Wednesday morning. Meeting adjourned.

Tuesday, 1.30 p. m., the two associations, their wives and families, enjoyed a delightful trolley ride to Mt. Clemens as guests of the Detroit Creamery Company and Business Men's Association. The special cars being furnished by the Creamery Company. After a two hours' inspection of the stables and buildings at the Ingleside Farms the visitors were conducted through the famous Bath Houses and other places of interest at Mt. Clemens, returning to Detroit via Shore Line. At 8.30 the members and visitors gathered for the moonlight excursion on the steamer Columbia. The weather was ideal and the trip was a rare treat to many and enjoyed by all.

As early as eight a. m. four special cars were provided by the association, and the guests and members all enjoyed the trolley trip to Rochester, where they were royally entertained by Parke, Davis & Co. Immediately upon arrival at the Parkdale farm, the ladies were escorted through the several biological and other departments of interest to them, while the members witnessed the demonstration of the production of serum and anti-toxin, after which the convention assembled in a most beautiful grove, where they indulged in a genuine picnic luncheon. Dr. Krey then presented the ladies with a very neat and useful souvenir from the Parke-Davis Laboratory.

After luncheon, order was called and Dr. G. W. Dunphy announced the arrival of a ten pound boy at the home of Dr. and Mrs. W. H. Wilson. The doctor very ably responded with a speech.

Dr. W. H. Hoskins, being present, spoke in full of the army veterinary bill, urging the association to appeal to their respective senators, asking for a favorable action upon this bill.

A committee of three was appointed by the president to draft

a letter requesting the United States Senators to do all in their power to aid the passage of this bill.

Committee appointed: Drs. R. P. Lyman, G. W. Dunphy and Ward Giltner.

The following resolution was passed:

Whereas, The Parke-Davis Co., of Detroit, Michigan, has always shown a marked interest in the social as well as the scientific matters of the veterinary profession, and especially in the affairs of the Michigan Association and its associates and guests; therefore, be it

Resolved by the members of the Michigan and Northwestern Associations of Ohio, assembled here to-day, That a vote of thanks be extended to Parke, Davis & Co. for the very pleasant and generous entertainment afforded us on this occasion. A copy of these resolutions to be forwarded to the president of the company. Signed, B. C. Eldredge, President N. W. O. V. A.; A. McKercher, President M. S. V. M. A.

The entire afternoon was spent in an open-air clinic, while the ladies were given an automobile trip by the Business Men's Association of Rochester.

The operations included roakers, crytorchids, ovariectomy--mare, thyroidectomy, tenotomy, castrations (standing), canine operations, firing (spavin), amputation of the penis and several other minor operations.

Operators: Drs. W. R. J. Fowler, J. H. Blattenburg, H. Fulstow, S. Brenton, J. P. Hutton, C. A. Waldron, G. W. Dunphy, R. H. Wilson and others.

W. AUSTIN EWALT, Secretary-Treasurer.

TENNESSEE VETERINARY MEDICAL ASSOCIATION.

The annual meeting of the above association was held at Nashville, November 10th and 11th, 1914. After the formal opening of the meeting by President McMahon, of Columbia, an invocation was delivered by the Rev. Dr. W. T. Haggard, of the Tulip Street Methodist Church. Mayor Howse then welcomed the members and visitors to the city of Nashville. The address of welcome was responded to by Dr. M. Jacob, of Knoxville. The president's address followed. The meeting was largely attended and some very important business transacted. The control of the present outbreak of foot and mouth disease

furnished material for serious discussion, in which State Veterinarian George R. White took a prominent part. Dr. J. B. Terrell, Dresden, who fell out of his hospital loft in the latter part of October, fracturing three ribs and otherwise injuring himself had the ambition, stimulated by his interest in the association, to attend the Nashville meeting, although still far from well. The election of officers resulted as follows: President, J. B. L. Terrell, Dresden; First Vice-President, P. J. Landes, Nashville; Second Vice-President, F. R. Youree, Lebanon; Secretary, J. H. McMahon, Columbia; Treasurer, G. P. Whittington, Morristown.

SECRETARY J. H. BURT, KANSAS VETERINARY ASSOCIATION, announces that the annual meeting of that association will be held at Topeka, January 5th and 6th, 1915, and that the programme promises to be good, and a successful meeting is assured.

A CALL FROM PROFESSOR KAUPP.—We had the pleasure of a call from Prof. B. F. Kaupp on November 20, on his way up to New England, before taking up his duties as pathologist at the A. and M. College, Raleigh, N. C. Dr. Kaupp came up to Washington, D. C., from Spartansburg, S. C., thence to Rutgers College, New Brunswick, N. J., and then to New York. From New York he goes to Vermont before returning to the South.

EIGHTEENTH ANNUAL MEETING UNITED STATES LIVE STOCK SANITARY ASSOCIATION POSTPONED.—Chicago, November 13, 1914: Many Federal and State Officials are engaged in controlling foot-and-mouth epidemic, consequently your executive has agreed it is best to hold our meeting later than dates originally announced. Notice of new dates will be given as far in advance as possible. S. H. Ward, president; John J. Ferguson, secretary-treasurer.

VETERINARIAN PRESENTS GOVERNOR.—There recently floated into the REVIEW office a post card bearing a picture of Governor Luther E. Hall, of Louisiana, addressing a group of people from an automobile at the opening of the Baton Rouge Live Stock and Agricultural Fair. Seated in the auto we recognize our good friend, Dalrymple, who had just finished an introductory address and presented the Governor. The veterinary profession is always taken care of where Dr. Dalrymple is.

NEWS AND ITEMS.

BULLETIN, UNITED STATES LIVE STOCK SANITARY ASSOCIATION—FOOT AND MOUTH DISEASE—A SUMMARY OF THE SITUATION AS REPORTED TO THIS OFFICE NOVEMBER 12, 1914, BY OFFICIALS OF THE FOLLOWING STATES:

Illinois, Indiana, Kentucky, Michigan, Missouri, North Dakota, Rhode Island, Tennessee, Iowa, Massachusetts, Minnesota, Nebraska, Pennsylvania, South Dakota, Texas, Kansas, Mississippi, New Jersey, Wisconsin.

The following night letter telegrams were received in response to our wire to the official in charge in nineteen States:

“Please wire night letter to-night summarizing epidemic situation your State.”
JOHN J. FERGUSON, Secretary.

ILLINOIS.

November 12, 1914.

All infected herds and all exposed cattle have been quarantined and situation well in hand. All shipments within State will be made in accordance with Regulation 6, which provides for the movement of cattle, sheep and hogs under affidavit by the owner to the effect that the animals are not affected with, or have not been exposed to, the contagion of foot-and-mouth disease. All shipments to public stock yards must be made in clean and disinfected cars for immediate slaughter.

O. E. DYSON, State Veterinarian.

INDIANA.

November 11, 1914.

In eleven counties positive cases, five others report suspicious diagnosis not confirmed. Original counties believed to be clean and two others also. Canvass by State men shows no new centers to-day, several shipments to re-examine.

A. F. NELSON, State Veterinarian.

IOWA.

November 11, 1914.

Outbreak well in hand. Positive diagnosis two herds Iowa County, one herd Jones County, one herd Howard County, held

for examination. Final diagnosis in Clinton County to-morrow. All direct and secondary exposures held in quarantine, also railroad yards, all stock cars held for cleaning and disinfection. Quarantine on disease promises very rigid. Believe Iowa will escape with only few centers infection.

J. I. GIBSON, State Veterinarian.

KANSAS.

November 11, 1914.

Careful inquiry over State for past forty-eight hours finds no indication of foot-and-mouth disease. State clear of said disease up to five p. m. to-day.

TAYLOR RIDDLE, Live Stock Sanitary Commissioner.

KENTUCKY.

November 11, 1914.

Dr. Graham out of city, State quarantined. 18 cattle slaughtered at Sheperdsville, Bullit County, to-day other reports of suspicion, but unofficial.

R. L. PONTIUS.

MASSACHUSETTS.

November 11, 1914.

Fourteen herds, including about 200 cattle and 300 swine in twelve towns in widely separated sections of State. New cases reported daily. State under strict quarantine. Interstate movement regulated by strictest State-wide quarantine covering all live stock. Slaughter to begin at once. All public markets closed.

FRED F. WALKER, Commissioner.

MICHIGAN.

November 11, 1914.

The epidemic of foot-and-mouth disease is fairly well in hand. We expect to have it wiped out this week. Inspectors not finding any new cases yesterday or to-day. No infection of native herds from feeders shipped in, but many cars of feeders are found diseased. Situation looking brighter.

GEO. W. DUNPHY, State Veterinarian.

MINNESOTA.

November 11, 1914.

Three cars exposed cattle unloaded transfer shipped west on reaching Glendive found diseased. Fed at Mandan and Glen-

dive. All yards quarantined. Ten shipments settlers stock exposed at transfer. These quarantined. No developments yet. Transportation companies disinfecting all cars. Situation so far favorable.

S. H. WARD, State Veterinarian.

MISSISSIPPI.

November 11, 1914.

We investigated report of outbreak foot-and-mouth disease at Como, Miss., and found no evidence of the disease being there. This was confirmed by Federal inspectors. Do not believe the disease exists in this State. Precautions are taken.

E. M. RANCK, State Veterinarian.

MISSOURI.

November 11, 1914.

Have found no foot-and-mouth disease in Missouri. We are reinspectng about one hundred fifty recent shipments of cattle into this State and are prepared to promptly control any outbreak that may be found. Are carefully guarding against all possible sources of infection.

D. F. LUCKEY, State Veterinarian.

NEBRASKA.

November 11, 1914.

Foot-and-mouth disease has not reached us at present time. Dourine exists in central part of the State. Five counties have been placed in quarantine; Cherry, Thomas, Blaine, Hooper, Grant; have quarantined all shipments of hogs, cattle and sheep since October 1st into Nebraska from Chicago Stock Yards.

L. C. KIGIN, Deputy State Veterinarian.

NEW JERSEY.

November 11, 1914.

Twenty-five cases of foot-and-mouth disease have been discovered in one herd in Hudson Co., N. J., animals are being slaughtered and premises thoroughly disinfected. History of cases show that they came from Stock Yards in New York City. All animals shipped from these yards to New Jersey since October 1st are being examined in Hudson County. All cattle are being inspected by veterinarians. State quarantine has been issued on all cattle shipped into New Jersey since October 1st. State

officials are co-operating with Federal authorities in effort to discover any cases in State and to limit spread of the disease.

JACOB C. PRICE, Secretary.

NORTH DAKOTA.

November 11, 1914.

No disease known to exist in this State. Shipment infected cattle fed here enroute Montana Stock Yards, immediately quarantined, being cleaned and disinfected.

W. F. CREWE.

PENNSYLVANIA.

November 11, 1914.

In addition to Pittsburg, Lancaster and West Philadelphia Stock Yards have one hundred premises affected to date. Many suspicious cases reported which are being investigated. Entire State quarantined yesterday. Have mailed copy of order. Destruction of animals and disinfecting of premises under way. Conditions more serious than nineteen eight outbreak.

C. J. MARSHALL.

RHODE ISLAND.

November 11, 1914.

At present about two hundred and ninety-two cattle and seventy hogs quarantined in Rhode Island, all foot-and-mouth disease. One hundred and twelve of above cattle diseased. Sixteen points of infection in six towns and one city which are in two counties, all traced to Brighton market, Brighton, Mass.

JOHN S. POLLARD, State Veterinarian.

SOUTH DAKOTA.

November 11, 1914.

No known infection of foot-and-mouth disease in South Dakota. About twenty importations which may be exposed held under quarantine at present.

O. C. SELBY, State Veterinarian.

TENNESSEE.

November 11, 1914.

We have not found a single case of European foot-and-mouth disease in Tennessee. Have already traced and examined several shipments and found them all free from disease. Have five more shipments from the State of Illinois to trace and examine. This will be done Thursday and Friday. If we find no disease in these,

we will feel fairly well satisfied that Tennessee has escaped the outbreak unless it be introduced later by infected live stock cars. All public stock yards in the State have been ordered cleaned and disinfected under official supervision within five days.

C. R. WHITE, State Veterinarian.

TEXAS.

November 11, 1914.

We have no epidemic in this State.

E. R. FORBES.

WISCONSIN.

November 11, 1914.

Seven herds known to be infected. Three other herds contain suspected cases. Almost all shipments have been given preliminary examinations. First two herds have been destroyed to date. Work progressing rapidly. Expect to have all infected herds disposed of this week. Only one herd separate from these found affected. No stock except horses will be moved in Wisconsin except on veterinarian's certificate and in disinfected cars. All suspected herds quarantined.

O. H. ELIASON.

NEW JERSEY LEGISLATURE HAS VETERINARY REPRESENTATIVE.—Dr. E. L. Loblein, of the State Legislature of New Jersey, has the distinction of being its youngest member; and we predict, one of its most active members. Dr. Loblein's father, who was among the leading veterinarians of New Jersey, was our valued friend for many years; while our acquaintance with the present Dr. Loblein (who has been secretary of the Veterinary Medical Association of New Jersey for several years, enjoys a splendid practice in New Brunswick, that state, and has recently reached the distinguished and dignified position of Member of the State Legislature) dates back to his days of short pants; so we feel that we know him pretty well. And because of that knowledge, we congratulate the members of the veterinary profession in New Jersey, in having a man of Dr. Loblein's type represent them at the State Capital.

DR. McWHINNEY DEAD.—Dr. Henry McWhinney, city veterinarian, of Troy, N. Y., died the last of November. Dr. McWhinney, who was 49 years old, was a well-known veterinarian. He was a graduate of McGill University, and member of the New York State Veterinary Medical Society and American Veterinary Medical Association. The doctor was a thirty-two degree Mason.

UNITED STATES CIVIL-SERVICE EXAMINATION—VETERINARIAN (MALE)—JANUARY 6, 1915.—The United States Civil Service Commission announces an open competitive examination for veterinarian, for men only, on January 6, 1915. From the register of eligibles resulting from this examination certification will be made to fill vacancies in the position of veterinary inspector in the Bureau of Animal Industry, Department of Agriculture, and in the position of veterinarian in the Quartermaster Corps, U. S. Army, unless it is found to be in the interest of the service to fill any vacancy by reinstatement, transfer, or promotion.

Preliminary Requirements, Entrance Salaries, Etc.—*Bureau of Animal Industry*—Graduation from an accredited veterinary college or the fact that the applicant is a senior student in such an institution, is a prerequisite. Such senior students will not be certified for appointment until after they have furnished proof of actual graduation. Entrance salary, \$1,400 per annum. It is probable that a large number of appointments will be made in the near future.

Quartermaster Corps—Graduation from a veterinary college and one year's actual practice as veterinarian on horses are prerequisites. Entrance salary, \$1,200 per annum. There are now several vacancies at Texas City and Galveston, Tex., and additional vacancies will depend upon the activity of the Army on the Mexican border. In certification of eligibles preference will be given to those examined in the vicinity of the place where the vacancy exists.

Competitors will be examined in the following subjects, which will have the relative weights indicated:

Subjects.	Weights.
1. Letter writing	10
2. Veterinary anatomy and physiology.....	20
3. Veterinary pathology and meat inspection.....	30
4. Theory and practice of veterinary medicine.....	30
5. Education, training, and experience.....	10
Total.....	100

Each applicant will be required to submit to the examiner on the day of the examination an unmounted photograph of himself taken within two years. An applicant who fails to present such photograph will not be admitted to the examination. Tintypes will not be accepted.

This examination is open to all men who are citizens of the United States and who meet the requirements.

Persons who meet the requirements and desire this examination should at once apply for Form 1312, stating the title of the examination for which the form is desired, to the United States Civil Service Commission, Washington, D. C.

THE PLACE FOR A VETERINARIAN.—It has always seemed strange that a trained man, a veterinary surgeon, was not at the head of the Massachusetts Cattle Commission. And it seems doubly strange now with the dreaded hoof-and-mouth disease affecting herds in many portions of the state.

This disease might easily have been kept out of Massachusetts if proper precautions were taken when it was known that it had broken out in the stock yards of Chicago and in the cattle pens of Buffalo. But with an untrained officer at the head of our state cattle commission it is not to be wondered at that proper precautions were not taken until too late.

As the *Boston Herald* says on this matter: "The present epidemic of foot-and-mouth disease which attacks all animals with hoofs and many without serves to make very evident that only through skilled protection of our live-stock can our people be protected, both in their health and in their pocket-books. The Massachusetts commissioner of animal industry acknowledges that the whole present epidemic in Massachusetts, with its great loss to the state, might have been prevented. He states that on October 21 he was notified that this epidemic had traveled as far east as the stockyards at Buffalo. In spite of this warning cattle were allowed to come into Massachusetts and were not quarantined when they reached here, Mr. Walker trusting to an inspection of cattle as they entered the state.

"As the disease takes some days to develop and the germ is as yet unknown, no inspection could possibly discover the disease in the cows before it had made its appearance, so that inspection was worthless, as the result has proved. The cattle from the west went to a dealer in Amherst, who sells his cows at Brighton. An infected animal carried there the disease from Amherst, and from Brighton other cattle infected by this one, have gone all over Massachusetts and evidently to other parts of New England.

"The cattle commissioner of Massachusetts should be a thoroughly trained veterinarian—Mr. Walker is not a veterinarian. It was only a question of time before something of this sort must happen, costing the state hundreds of thousands of dollars. The farming industry of Massachusetts is not to be made dependent on anything but the best of available talent."—(*Lawrence Telegram*.)

THE NEW ORLEANS MEETING.

(Continued from Page 256.)

VOTE OF MEMBERSHIP RECEIVED TO DECEMBER 9.

Having been the official organ of the national association from the time of its birth, and always having kept the members posted on all the details pertaining to the same, the REVIEW felt it to be its duty on this occasion, to delay the December issue with the hope that in the addition of this page, it would be enabled to bring to the A. V. M. A. members, and to *all* its readers, definite knowledge of the result of the poll of the members, as to their wishes in the matter of postponement of the meeting at New Orleans, from the original dates set, to a time when (the fight against foot-and-mouth disease having been won) a large and successful meeting will be possible. We fear, however, that it will not be possible for us to wait for the full returns, without having the number reach our readers altogether too late; but are in a position to say now, that out of 747 votes returned 651 have been for postponement; so that it is safe to say the meeting will be postponed. Of course an official announcement of the final result will be sent each member from the secretary's office. We regret exceedingly, as no doubt everyone does, that a postponement was necessary, as our editorial shows that we were all prepared to go; but under the circumstances we feel that everyone should accept it gracefully. By this step the members will at least be spared the time and expense of travel, that was not possible to save those who went to London for the international congress, only to find that country engaged in war, and the meeting therefore impossible. Besides, there is no reason why a successful meeting cannot be held in April; possibly during Easter week, when college men will again have a few days' vacation. The local committee of arrangements have worked hard in preparation for this meeting, and want a full attendance; and, realizing that a full attendance cannot be had at the original dates fixed, are strongly in favor of postponement. Consideration for those gentlemen should help us to content ourselves with the change. We should be more than contented not to have another London experience, and as soon as it is possible to fix the new dates, hustle to make the deferred meeting all that our friends in the Southland would have it—the biggest, most impressive and best that has yet been held.

VETERINARY MEDICAL ASSOCIATION MEETINGS.

In the accompanying table the data given is reported by many Secretaries as being of great value to their Associations, and it is to be regretted that some neglect to inform us of the dates and places of their meetings.

Secretaries are earnestly requested to see that their organizations are properly included in the following list :

Name of Organization.	Date of Next Meeting.	Place of Meeting.	Name and Address Secretary.
Alabama Veterinary Med. Ass'n.....	Mar. 5-6-7, 1914	Auburn.....	C. A. Cary, Auburn.
Alumni Ass'n. N. Y.-A. V. C.....	June 10, 1915.....	141 W. 54th St.	P. K. Nichols, Port Richmond, N. Y.
American V. M. Ass'n.....	Dec., 28-31, 1914	New Orleans, La	Nelsen S. Mayo, 4753 Ravenswood Ave., Chicago, Ill.
Arkansas Veterinary Ass'n.....	January 5-6, 1915	Little Rock.....	R. M. Gow, Fayetteville.
Ass'n Médécalle Veterinaire Française.	1st and 3d Thur. of	Lect. Room, La-	
"Laval".....	each month.....	val Un'y, Mon.	J. P. A. Houde, Montreal.
B. A. I. Vet. In. A., Chicago.....	2d Fri. each month.....	Chicago.....	H. A. Smith, Chicago, Ill.
B. A. I. Vet. In. A., So. Omaha.....	3d Mon. each month.....	S. Omaha, Neb.	E. J. Jackson, So. Omaha.
Buchanan Co. Vet. Ass'n.....	Monthly.....	St. Joseph.....	F. W. Caldwell, St. Joseph, Mo.
California State V. M. Ass'n.....	December 10, 1913.....	San Francisco.....	John F. McKenna, Fresno.
Central Canada V. Ass'n.....	Feb. and July.....	Ottawa.....	A. E. James, Ottawa.
Central N. Y. Vet. Med. Ass'n.....	June and Nov.....	Syracuse.....	W. B. Switzer, Oswego.
Chicago Veterinary Society.....	2d Tues. each month.....	Chicago.....	D. M. Campbell, Chicago.
Colorado State V. M. Ass'n.....	January, 1914.....	Denver.....	I. E. Newsom, Ft. Collins.
Connecticut V. M. Ass'n.....	1st Tues., Feb., 1915.....	Hartford.....	B. K. Dow, Willimantic.
Delaware State Vet. Society.....	Jan., Apl., July, Oct.....	Wilmington.....	A. S. Houchin, Newark, Del.
Eesox Co. (N. J.) V. M. A.....	3d Mon. each month.....	Newark, N. J.....	J. F. Carey, East Orange, N. J.
Genesee Valley V. M. Ass'n.....	2d week, July, 1913.....	Rochester.....	J. H. Taylor, Henrietta.
Georgia State V. M. A.....	Dec. 22-23, 1913.....	Atlanta.....	P. F. Bahnsen, Americus.
Hamilton Co. (Ohio) V. A.....			Louis P. Cook, Cincinnati.
Illmo Vet. Med. Ass'n.....	Nov. 20, 1914.....	E. St. Louis.....	L. B. Michael, Collinsville, Ill.
Illinois State V. M. Ass'n.....	Dec. 3-4-5, 1914.....	Chicago.....	L. A. Merrill, Chicago.
Indiana Veterinary Association.....	Jan. 14, 1914.....	Indianapolis.....	A. F. Nelson, Indianapolis.
Iowa Veterinary Ass'n.....	Dec. 9-10-11, 1914.....	Cedar Rapids.....	C. H. Stange, Ames.
Kansas State V. M. Ass'n.....	Jan. 5, 6, 1915.....	Topeka.....	J. H. Burt, Manhattan.
Kentucky V. M. Ass'n.....	Oct. & Feb. each year.....	Lexington.....	Robert Graham, Lexington.
Keystone V. M. Ass'n.....	2d Tues. each month.....	Philadelphia.....	Cheston M. Hoskins.
Lake Erie V. M. Association.....	Pending.....	Pending.....	Phil. H. Fulstow, Norwalk, Ohio.
Louisiana State V. M. Ass'n.....	Sept., 1914.....	Lake Charles.....	Hamlet Moore, New Orleans, La.
Maine Vet. Med. Ass'n.....	Jan. 27, 1915.....	Augusta.....	H. B. Wescott, Portland.
Maryland State Vet. Society.....		Baltimore.....	H. H. Counselman, Sec'y.
Massachusetts Vet. Ass'n.....	4th Wed. each month.....	Young's, Boston.....	W. T. Pugh, Southbridge.
Michigan State V. M. Ass'n.....	Feb. 3, 4, 1914.....	Lansing.....	W. A. Ewalt, Mt. Clemens.
Minnesota State V. M. Ass'n.....	Jan. 13-14, 1915.....	Northfield.....	G. Ed. Leech, Winona.
Mississippi State V. M. Ass'n.....	1914.....	Vicksburg.....	J. D. Townsend, Louisville.
Missouri Valley V. Ass'n.....	Jan. 27, 28, 29, 1914.....	Kansas City, Mo.....	Hal. C. Simpson, Denison, Ia.
Mississippi Valley V. M. Ass'n.....	Semi-Annually.....	Galesburg, Ill.....	G. E. McIntyre, Alexis, Ill.
Missouri Vet. Med. Ass'n.....	July, 1915.....	St. Louis.....	Chas. D. Tolse, Kansas City.
Montana State V. M. A.....	Sept. 24, 25, 1913.....	Helena.....	A. D. Knowles, Livingston.
Nat'l Ass'n B. A. I. Employees.....	2d Mon., Aug., 1915.....	New York, N. Y.....	S. J. Walkley, 185 N. W. Ave., Milwaukee, Wis.
Nebraska V. M. Ass'n.....	1st Mo. & Tu., Dec '13	Lincoln, Neb.....	Carl J. Norden, Nebraska City.
New York S. V. M. Soc'y.....	1915.....	Ithaca.....	H. J. Morka, Ithaca, N. Y.
North Carolina V. M. Ass'n.....	June 23, 1914.....	Wilson.....	J. F. Spoon, Burlington.
North Dakota V. M. Ass'n.....	Week of July 20, 1914.....	Fargo.....	A. F. Schalk, Agricultural College.
North-Western Ohio V. M. A.....	Nov. 1913.....	Delphos.....	E. V. Hoyer, Delphos.
Ohio State V. M. Ass'n.....	Jan. 6-7, 1915.....	Columbus.....	Reuben Hilty, Toledo.
Ohio Soc. of Comparative Med.....	Annually.....	Upper Sandusky.....	F. F. Sheets, Van Wert, Ohio.
Ohio Valley Vet. Med. Ass'n.....			J. C. Howard, Sullivan.
Oklahoma V. M. Ass'n.....	Fall, 1913.....	Oklahoma City.....	C. E. Steel, Oklahoma City.
Ontario Vet. Ass'n.....	1st Week in Feb. 1914.....	Toronto.....	L. A. Willson, Toronto.
Pennsylvania State V. M. A.....	March, 1915.....	Harrisburg.....	John Reichel, Glenolden.
Phillipine V. M. A.....	Call of President.....	Manila.....	David C. Kretzer, Manila.
Portland Vet. Med. Ass'n.....	4th Tues. each month.....	Portland, Ore.....	Sam. B. Foster, Portland, Ore.
Province of Quebec V. M. A.....		Mon. and Que.....	Gustave Boyer, Rigaud, P. Q.
Rhode Island V. M. Ass'n.....	Jan. and June.....	Providence.....	J. S. Pollard, Providence.
South Carolina Ass'n of Veter'n.....	Pending.....	Pending.....	B. K. McInnes, Charleston.
South Illinois V. M. and Surg. Ass'n.....	Aug. 4-5-6, 1914.....	Salem.....	F. Hockman, Iola.
St. Louis Soc. of Vet. Inspectors.....	1st Wed. fol. the 2d		
Schuykill Valley V. M. A.....	Sun. each month.....	St. Louis.....	Wm. T. Conway, St. Louis, Mo.
Soc. Vet. Alumni Univ. Penn.....	Dec. 16, 1914.....	Reading.....	W. G. Huyett, Wernersville.
South Dakota V. M. A.....	Pending.....	Philadelphia.....	B. T. Woodward, Wash'n, D. C.
Southern Aux. of Cal. S. V. M. Ass'n.....	Jan., Apl., July, Oct.....	Madison.....	S. W. Allen, Watertown.
South St. Joseph Ass'n of Vet. Insp.....	4th Tues. each month.....	Los Angeles.....	H. A. Dell, Los Angeles.
Tennessee Vet. Med. Ass'n.....	November, 1914.....	407 Illinois Ave.....	J. R. Collins, South St. Joseph.
Texas V. M. Ass'n.....	Nov., 1913.....	Nashville.....	O. L. McMahon, Columbia.
Twin City V. M. Ass'n.....	2d Thu. each month.....	College Station.....	Allen J. Foster, Marshall.
Utah Vet. Med. Ass'n.....	Spring of 1914.....	St. P.-Minneap.....	M. H. Reynolds, St. Paul, Minn.
Vermont Vet. Med. Ass'n.....		Salt Lake City.....	E. J. Coburn, Brigham City.
Veterinary Ass'n of Alberta.....			G. T. Stevenson, Burlington.
Vet. Ass'n Dist. of Columbia.....	3d Wed. each month.....	514 9th St., N.W	C. H. H. Sweetapple, For. Saskat-
Vet. Med. Ass'n, Geo. Wash. Univ.....	1st Sat. each month.....	Wash'ton, D. C.....	chewan, Alta., Can.
Vet. Ass'n of Manitoba.....	Feb. & July each yr.....	Winnipeg.....	M. Page Smith, Washington, D. C.
Vet. Med. Ass'n of N. J.....	Jan. 14, 1915.....	141 W. 54th St.....	J. M. Cashell, 2115 14th Street.
V. M. Ass'n, New York City.....	1st Wed. each month.....	Jersey City.....	Wm. Hilton, Winnipeg.
Veterinary Practitioners' Club.....	Monthly.....	St. Joseph.....	E. L. Loblein, New Brunswick.
Virginia State V. M. Ass'n.....	July 9-10, 1914.....	St. Joseph.....	R. S. MacKellar, N. Y. City.
Washington State Col. V. M. A.....	1st & 3d Fri. Eve.....	St. Joseph.....	T. F. O'Dea, Union Hill, N. J.
Washington State V. M. A.....	June, 1915.....	St. Joseph.....	Geo. C. Faville, North Emporia.
Western N. Y. V. M. A.....	June 24, 1914.....	St. Joseph.....	R. J. Donohue, Pullman.
Western Penn. V. M. Ass'n.....	3d Thu. each month.....	St. Joseph.....	Carl Cozier, Bellingham.
Wisconsin Soc. Vet. Grad.....	Feb. 10, 11, 1914.....	St. Joseph.....	W. E. Fritz, 355 Jefferson St., Buffalo
York Co. (Pa.) V. M. A.....	June, Sept., Dec., Mar	St. Joseph.....	Benjamin Gunner, Waterville.
		St. Joseph.....	W. W. Arzberger, Watertown.
		St. Joseph.....	E. S. Bausticker, York, Pa.

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THE VALUE OF COPIOUS ENEMAS IN COLICS is fully appreciated by veterinarians who meet any great number of cases; and *all* veterinarians should be equipped with a suitable apparatus to administer them in a scientific manner. Frank S. Betz, whose advertisement appears on the upper half of page 20 of the present issue, can fit a veterinarian out in that respect for the very reasonable sum of \$5.25. Write them, and mention the REVIEW.

IOGEN-PRETOGEN is the most economical form in which to employ iodine in a large class of cases in veterinary practice. And when we say economical, we do not mean merely the saving of money, but of conserving to the patient the full value of the medicament employed; which should be the aim of all practitioners who are earnestly in pursuit of results. The value of iodine is too well known to require comment, but all do not know how much can be accomplished with a dram of iodine when incorporated in a vehicle like petrogen. Refer to the full page advertisement on page 20 of this issue, and write the manufacturers for literature, being careful to mention the REVIEW.

AMERICANS FIRST: It should interest American veterinarians very much to learn that there is promise of a tetanus-antitoxin famine in this country. Within the last sixty days, enormous orders for this remedy have come from Europe, where the antitoxin is administered to wounded soldiers to prevent the occurrence of lockjaw, which is one of the most common and deadly complications of the wounds of war.

We learn that virtually every large commercial serum-laboratory in this country, as well as a laboratory maintained by a great municipality, is disposing of its surplus output to the French, Russian, and other European armies. Since it takes from six to nine months to produce tetanus antitoxin, there is considerable likelihood of a famine in this indispensable commodity.

Tetanus antitoxin is now employed by virtually every veterinarian not only as a reliable prophylactic against tetanus in horses and mules but as a curative agent as well.

In view of this threatened antitoxin famine, we cannot too strongly urge all American veterinarians to provide at once for a supply of this remedy before prices advance, as they are almost sure to do. Whatever happens abroad, it is important that our own people in the United States are taken care of.

The Abbott Alkaloidal Co. is arranging to take care of the needs of American veterinarians, preferring above everything to conserve the interests of our people at home. It has made no advance in the price of Slee's Tetanus Antitoxin, which it handles exclusively.

AMERICAN VETERINARY REVIEW.

JANUARY, 1915.

EDITORIAL.

EUROPEAN CHRONICLE.

Bois Jerome, November 15, 1914.

PSYCHOSIS IN ANIMALS.—The *Journal de Zootechnie* contains a review from the pen of Prof. Cadeac, which at the present time calls the attention of comparative pathologists.

Under the name of *Psychosis* are designated temporary or permanent morbid conditions, which are characterized by disturbances of psychical functions. They have very close relations with neurological affections, but their importance in our domestic animals has not the same serious character as it has in human medicine.

A few of those are considered by Prof. Cadeac.

Dementia.—The weakening of all the intellectual faculties (memory, attention, judgment, association of ideas) constitute *dementia*. This name is applied to all states of chronic and incurable intellectual weakening.

In dogs, it frequently follows an attack of subacute meningo-encephalitis, as has been observed by Marchand and Petit, and is manifested by symptoms of progressive general paralysis.

A traumatic dementia has been mentioned in a cat, after a fall in a well. He remained an imbecile for the balance of his life. Pierquin, who observed that case, records also that of a parrot, which lost the use of his voice and speech during a long cannon-firing. This bird was never able to speak afterwards when a gun was fired. The same observer records that the presence of a dog produced in some cats a psychosis of fear, which

is such that they remain immobile, stupefied, as in full extasis, and will not return to their normal condition for several hours after the dog had gone.

Was this true dementia?

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Idiocy.—Under the name of idiocy, imbecility, mental debility, is designated the intellectual weakening due to an arrest in the development of the nervous elements, while dementia is applied to that weakening after the nervous system has been fully developed. Dogs may be born idiots because of a cerebral alteration during foetal or intra-uterine period. They may become so, when a diffused lesion of the cerebral cortex takes place in the first weeks of their life.

An idiotic dog presents peculiar symptoms: he looks abnormal, peculiar and different from any other dog of his age. Left in a yard, he seems lost, assumes queer positions; his head shakes from right to left, he is greatly afraid when approached noisily; but instead of running away, he rolls himself down, crouching, with his eyes frightened, without barking or defending himself.

He does not know where to look for his food and only takes that which is placed near him. He hears, sees; but these functions give rise to only simple bulbo-medullary reflexes; the reactions are never related to the sensations. The general sensibility is dull or reduced; a prick promotes the moving of a leg without manifestations of pain, without cries or defense. He has a tendency to move in a circle, does not recognize the person that brings him his food; shows no feeling at the approach of another dog, does not know where to find his kennel, he becomes dirty, has no memory, nor judgment, his actions are all automatic and queer.

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Melancholy.—This is characterized by great sadness with intellectual laziness and voluntary inertia. If the intellectual

troubles are difficult to make out in our domestic animals, troubles of affection and those of locomotion can be observed.

The dog that has lost his master is sometimes depressed, sad, unwilling to move, dumb or barking sadly, he refuses all food, and may die after months in marasm without having presented any special symptoms of sickness.

Under the name of melancholic or of circular craziness the raving vertigo of horses has often been designated. For Gleisberg it is, and he considers it as due to organic diseases of the brain. Hoffmann considers it, with immobility, as a psychical disease. Freré says that raving vertigo is analogous to mental confusion in man.

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Phobias.—The general panics mentioned in horses and cattle are less acute psychosis or phobias than reactionary instincts, stimulated by some external influences. They are manifested by breaking and running away, stampedes and are not rare accidents occurring during battles, manœuvring of troops or during fevers.

The excitation of one or several individuals in delirium is followed by an uncontrolled runaway of most of the animals, which throw themselves blindly against any obstacle. Even sometimes during those conditions bovines exhibit peculiar disturbances in their actions, their voice and their digestive functions.

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Imaginary Gestation.—This has been considered by some as a sign of hysteria. It is a periodical function stimulated by the nervous center. Sluts that have had pups before, but which have not been to the dog at the time of their last being in heat, may fifty days after, present the preliminaries of milk secretion, then towards nine or ten days after, have their vulva swollen, open, with glairy discharge. Then they proceed to the making of the place for them to deliver, they become agitated, nervous,

are under the impression that they will have little ones. A few days after, they have milk, and it is probable that if at that time, new-born puppies were given to them, they would gladly adopt them.

Some mares present eleven and half months, after a fruitless covering, the return of the milk secretion; they sometimes offer the signs of an approaching parturition, three hundred and forty days after meeting a stallion which has not served them. They show all day great uneasiness, lay down often, get up on a jump, call for their colt, whinny loudly when they see people round and soon have enough milk to feed another colt.

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Sexual Perversions.—Those are observed under the form of more or less unresisting impulses in degenerated animals. The most common are onanism and coupling with animals of a different specie.

Onanism designates the whole of the means resorted to by individuals of either sex, to produce artificially the venerian organism, without the conditions of normal coitus. Like man, animals do it to satisfy a similar voluptuous feeling. Stallions that masturbate themselves, sometimes have no excitement near females.

Stallions of the equine species perform this act by striking their abdomen with the penis, by the contractions of the ischio-cavernous muscles. Mares rub themselves against surrounding hard bodies. Donkeys tickle the extremity of the penis with their lips. Dogs and male goats frequently masturbate by rapid contractions of the hind quarters. Female cats rub themselves against convenient objects. Castration is the only means to cure animals of those bad habits.

Unnatural Coupling.—This is not rare to observe. Dog is fond of women. Large Newfoundland and St. Bernard dogs sometimes will throw one down and manifest a strong desire for copulation. Dogs of smaller size attack hens sometimes. Cadiot has recorded the case of one eighteen months old, which used to

play with hens and took the habit of mounting one of them. Villemin has seen a ten months old dog mount a hen, while he held her firmly with her head in his month. After he was castrated, he always tried to continue his habit.

A horse may mount a cow, and even perforate her vagina. A bull may do it with a mare.

True pederasty exists in dogs, as well as in man. Some look for dogs. Albrecht reports the case of a dog that had prostatitis and a peculiar odor of trimethylamine about him and was covered by male dogs. He submitted willingly to the act.

The unnatural coupling, results no doubt, sometimes from a psychosis, or again is due to obstacles existing to the execution of normal sexual connections. If there are human beings who resort to flagellation to excite a state of genital erethism, there are also stallions which, though full of life and strength, do not enter into erection near a mare unless a whip is snapped near them or unless they feel it tickling their legs.

According to Cornevin the whip promotes the sensation, which calls the image and this gives rise to the idea.

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ON ALOPECIA.—The etiology and pathogeny of this pathological manifestation on the skin is rather obscure. Whether it is due to nervous, mechanical troubles, infectious or toxic, is yet an unsettled question.

At one of the meetings of the *Societe Centrale de Paris* an interesting paper was read, to throw, if possible, some light on the subject.

Three cases were recorded. In a first, it was a horse that received in subcutaneous injections, at intervals of various times, bacilli of pest, treated at 56 degrees which at each injection produced an exaggerated local reaction. After the administration of a certain quantity of the ampoules, there appeared wide spots of urticaria, which spread all over the body, except the extremities and which were followed by an abundant epidermic elimination and a complete depilation.

The second case was that of a horse, which since several months past, had been submitted to subcutaneous injections of diphtheric toxine. He also presented small oedematous patches, here and there all over the body, but more developed at the point of inoculation. Over these patches the hairs came off also, carrying with them epidermal sloughs.

The third case was that of a fresh horse, upon which the first vaccination, made with a mixture of diphtheric toxine and antitoxine, did not produce any reaction. But with the pure injection of toxine following, he had on the neck and the shoulder oedematous swellings, which spread all over the body, the hind quarters and not on the extremities. On the surface of those swellings the hairs fell off in thick tufts.

These three animals recovered. It is remarkable that with them the antitoxic power of their serum was superior to the average of sera. The horses belong to the Pasteur Laboratory at Garches and may have been seen by the American veterinarians who visited the laboratory last summer.

In these observations, one was probably in the presence of a manifestation of hypersensibility, which is a modality of anaphylaxy; which is by itself a phenomena in margin of immunity. This hypersensibility is manifested most ordinarily in horses used for the preparation of serum by oedemas localized at the point of inoculation, but sometimes there is a true urticaria, an eruption more or less generalized. Finally a third mode of reaction may be represented by *alopecia*.

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"It is then proper to ask if anesthesia cannot explain the pathogeny of alopecia, by the action of the causes, ordinarily considered; that is to say of the substances as different, as the microbial toxines, intestinal poisons, or again mercury, all of which are considered by some as the pathogenic cause."

"In relation to hydragyric alopecia, it is to this day admitted that there is a mercurial intoxication. But hydragyrisms proper presents a series of well-marked symptoms, of which not a word has been said in alopecia. It is besides, difficult to attribute such

a complete falling off of the hairs by the cutaneous absorption of a minimum dose of ointment used as a blistering ointment.

On the contrary, it belongs to the anaphylactic shock of being promoted by a small quantity of substance, unable to produce by itself a toxic action. Again it is known that urticaria is, in human medicine, one of the symptoms of serial or of alimentary anaphylaxy. Finally the power of recovery that organism possesses, even after the administration of the promoting substance, as if the hypersensibility was disappearing to make room for immunity, that power comes to characterize anaphylaxy.

Until lately anaphylaxy, as immunity also, belonged to the domain reserved to colloids only; but recent works have proved that crystalloids enjoy the same properties and that for instance the medicamentous exanthema was nothing but an anaphylactic phenomena. Why should it not be the same for the hydragryc alopecia?

For the poisons produced by microbes and the toxines from auto-intoxic organisms, the same part can be attributed to them, as that of the toxines injected into horses in the preparation of serum.

These observations made by Prevot and Ramon justify the seducing hypothesis of a single pathogeny for all alopecias and they all deserve the deepest attention of pathologists.

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VETERINARY MEDICINE IN BATAVIA.—I have received from Doctor L. De Blicck what I believe, is a report to the Department of Agriculture. It forms a large volume, whose contents, I regret to say, I am not able to read as I would.

The first part of 167 pages is handsomely illustrated by plates referring to domestic animals, horses, cattle, sheep, camels and swine, and treats of facts relating to their management. Sanitary inspection is also considered, as well as the requirements for the position of inspectors.

Reference is also made of the veterinary colleges, to the preventive inoculation against redwater, pleuro-pneumonia contagiosa, actinomycosis, anthrax, osteoporosis, influenza, etc.

The second part contains governmental acts of 1888 to 1903, relating to the importation of domestic animals, of 1910 providing for the compulsory dipping of sheep, of 1903 relating to swine, of 1905 relating to the production and sale of milk.

The diagnosis of glanders seems to have also been the object of careful inquiry. And the following conclusions of the experiments made in the Dutch Indies with the sero-diagnosis are interesting:

1st—54 p. % of all cases of glanders could be diagnosed on the first test by the agglutination method.

Out of the cases, where the test was repeated, a decision was arrived at in 52 p. %, after the second, and in 2 p. % after the third test.

2d—The agglutination test of the serum of glandered horses showed a value of 1 to 1000 in 61,2 p. % of all cases.

3d—Out of all horses with an agglutination power of 1 to 1000 or over, only 1,09 p. % proved not to be affected with glanders at the post-mortem examination.

4th—Out of the infected horses, which were twice tested and in which the serum on the first test had a value, less than 1 to 1000, a decreased titre was shown by 5,6%.

5th—78,7 p. % of the cases of glanderous affections could be determined on the first test by the complement-fixation method.

In all cases, in which the test was repeated, the second test decided.

6th—In 87,9 p. % of all glandered horses, the serum showed a complete fixation in the quantity of at least 0,2 c.c.

7th—Only 0,69 p. % of the horses, in which the serum gave a complete fixation in the quantity of 0,2 c.c., and less, proved healthy at post mortem.

8th—In 5,7 p. % of all glandered affections the complement fixation of the serum was complete in a quantity not less than 0,2 c.c.

9th—In chronic cases the complement-fixation test gave much better results than the agglutination method.

10th—For the early diagnosis of recent infections the complement fixation proved not so effective as the mallein-and-agglutination test: the last ones alternately gave the first a positive result.

11th—In many cases, the agglutination method is satisfactory for the diagnosis of glanders: in fresh cases, it sometimes gives better results than the complement fixation.

12th—The method of complement fixation generally determines more cases of glanders than the agglutination. Horses in which the serum gives a complete fixation in the quantity of 0,2 c.c. and less, have to be considered as glandered, incomplete fixation in the quantity of 0,2 c.c. does not allow one to declare a horse as glanderous.

13th—The Prussian system (examination by serum test only) is not practical for the Dutch Indies.

14th—The results obtained from January, 1911, till November, 1913, allow one to decide, that in the Indies, glanders in the majority of cases can be detected in the shortest possible time by combining the above-mentioned serum tests with the ophthalmic mallein test.

In cases of re-examination the mallein test is to be omitted and only the serum is to be tested.

The report of Doctor De Blicke was printed in Batavia and I regret that I was not able to do him the justice that I am sure it deserves.

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BIBLIOGRAPHY—*Pathologie Interne des Animaux Domestiques* (Internal Pathology of Domestic Animals) by C. Cadeac, Professor at the veterinary school of Lyon—second edition, entirely revised and considerably enlarged. Published by J. B. Bailliere and Sons of Paris.

I have regularly taken notice of the various volumes of this edition of the great work undertaken some years ago by the learned professor of clinic of Lyon. To-day I have before me the 8th volume of the *Internal Pathology*.

There has been no work in the French veterinary literature, which has ever been required as much, as this part of Cadeac's Encyclopedia which forms a complete treatise of internal pathology. It is the result of over twenty years of collecting of important material which is now presented.

As our domestic animals differ considerably in the anatomical point of view, there are necessarily correlative differences in their pathology. And as each species has its specific diseases, the work of internal pathology meant a pathology for each animal. It is that enormous work that Professor Cadeac has realized with an excellent method.

The work that we have now and its predecessors, is illustrated by numerous figures. It is the last volume of the series and is valuable and interesting as those before it.

Its contents are the completion of the skin diseases partly treated in the volume before this, then those of muscles and finally of the nervous system. This is the principal part. It treats successively every form of disease affecting the meninges, the brain, the spinal cord and those of the nerves, neurosis, etc., etc.

The eight volumes of the encyclopedia are divided as follows: 1st Diseases of the mouth, pharynx and stomach; 2d of the intestines; 3d of the liver, peritoneum, nasal fossae, sinuses and larynx; 4th of the bronchia, lungs and pleurae; 5th of the circulatory system; 6th of the blood, general diseases and those of the genito-urinary apparatus; 7th of the skin and muscles; 8th of the nervous system.

To all foreign veterinarians, who read French, *Internal Pathology* will prove a most valuable work to read and study from.

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CASTRATION AND OVARIOTOMY by Professor F. Hobday, F.R.C.V.S. Second Edition: W. and A. K. Johnston, Limited, London.

If my memory is not at fault it was a little over fifty years ago or even more that a French veterinarian, Professor Gourdon,

published his work on *Castration of Domestic Animals*. The book covered some four or five hundred pages, was well illustrated, treated of the history relating to the operation, gave the anatomy, the *modus operandi* of the various methods then in use, of the effects of the operation, of the *sequelae* and complications, etc., etc. Ovariectomy by the Charlier method was then minutely described. In fact it has considered the whole subject in a most scientific manner. It was no doubt a work called to take its place in the veterinary literature, to become classical and written with the object of taking from the hands of the ordinary gelders, an operation which veterinarians had and have yet rather a tendency to leave with them.

Since the days of Gourdon's work, there has been others on the same subject, less complete probably, but essentially more practical and embracing other operations pertaining to similar objects, and covering the entire family of domestic animals, males and females, with also those that present anomalies.

The work that Prof. Hobday publishes to-day is one of these; and in its 160 pages, contains the most important facts relating to the subject.

It is divided into 10 chapters:

In the first is treated castration of horses, bulls, ram, goat, pig, dog and monkey, cat, rabbit, and guinea pig, wild and semi-domesticated animals.

Scrotal hernia fills the 2d chapter; castration of cryptorchids the 3d and 4th; Caponing of fowls and ostriches is in the 5th; in the 6th the effects of castration. In the 7th ovariectomy and hysterectomy of mares, in the 8th those of cattle, in the 9th those of small animals. Chapter 10 considers anomalies of sexual glands of man and horses.

Professor Hobday's work is nicely illustrated with 80 figures, some of which many readers will find themselves familiar with, and there can be no doubt that it will meet with the success that it deserves.

A. L.

FOOT AND MOUTH DISEASE.

The latest information seems to indicate a steady gain by the Federal and State sanitary forces over the outbreak of foot and mouth disease; so that all traces of it will probably be eradicated before the end of the winter season. Reports up to December 23 gave 78 counties in Iowa entirely released from quarantine, also the entire eastern and western portions of Kentucky, the northern peninsula of Michigan, many of the northern counties of Wisconsin and the lower third of Illinois. And in addition, the Federal government—through the Department of Agriculture—has been able to modify the quarantine on portions of those states referred to, and other infected states. The control of this terribly infectious disease, which is steadily leading up to its final eradication, is being effected by the rigid quarantine that has been placed on the affected states, thereby checking its widespread dissemination; and the organizations—State and Federal—and the individuals engaged in this work, like those in former outbreaks, are deserving of the greatest praise.

The mention of former outbreaks is suggestive of retrospection; and just at the moment we were writing the word, as if by fate, our hand fell upon *Circular No. 15 on Aphthous Fever or Foot and Mouth Disease*, by Dr. C. J. Marshall, issued by the State Live Stock Sanitary Board of the Commonwealth of Pennsylvania. The circular itself is recent, having been issued in November, 1914, but in perusing it, we came upon a description of Aphthous Fever, written by the late Leonard Pearson, and printed for distribution in 1908, that Dr. Marshall has incorporated in his circular, and which is so interesting and instructive that we have lifted it bodily from the bulletin and reprinted it here, instead of what we had intended writing on the subject from data at hand.

“APHTHOUS FEVER OR FOOT AND MOUTH DISEASE is an acute infectious and highly contagious disease affecting cloven-footed animals. It occurs most frequently among cattle, sheep, goats and swine. It has also, in some rare instances, occurred in horses

and some observations denote that dogs, cats and even poultry may be affected by it. The large herbivora, as found in zoological gardens—camels, giraffes, deer of all kinds and elephants—are susceptible. The disease is also transmissible to man; such transmission results most frequently in children and from the use of the raw milk of diseased cows. Aphthous fever in man is usually not a dangerous malady but it is recorded that in some outbreaks there have been many deaths.

“The disease is an old one but its most extensive destructive outbreaks have occurred during the past two hundred years. The several invasions of European herds and flocks by foot and mouth disease have come from the East toward the West, have been very extensive, covering great regions; involving several countries, and have sometimes persisted many years. The invasion of England which began at about the beginning of the second third of the past century continued nearly fifty years. The German invasion which began in 1888 continued seventeen years. In 1897-1899 more than 1,000,000 animals were attacked in Holland. There was a small outbreak of foot and mouth disease in Western Massachusetts and in Eastern New York in 1870, and an outbreak in New England, centered around Boston, in 1902-3. The latter outbreak involved 244 herds in four states and necessitated the destruction of 4,712 animals.

“The rate of mortality from foot and mouth disease is low but the destruction of values and the losses resulting from it are high. It was estimated in 1875 by Fleming, the great English authority, that the losses to the farmers of England from foot and mouth disease then amounted, upon a very conservative basis of appraisal, to 13,000,000 pounds sterling (\$65,000,000). The loss upon each herd attacked by this disease amounts to from 20 per cent. to 50 per cent. of its value. The consideration of this fact in connection with the knowledge that foot and mouth disease spreads with such remarkable facility that, if uncontrolled by public measures, it may attack from 25 to 75 per cent. of the herds of a district will give an idea as to the potentialities for harm that accompany outbreaks of this disease and will ex-

plain why farmers in countries that have passed through visitations of this plague dread it more than any other scourge of cattle.

"In 1871, about 700,000 cattle were attacked by foot and mouth disease in England. The average loss on each bovine animal attacked was £3, making the total loss about \$10,000,000. An outbreak of about the same dimensions occurred the same year in France; this outbreak was repressed but a reinfection began in 1893 and continued to increase and spread until 1900, after which it was fought back until 1906 when there was again a considerable increase. During twelve years, up to 1905, 16,000,000 animals were attacked by foot and mouth disease in Germany. The losses to German farmers from this cause amounted to well about \$100,000,000 and the cost to the government of measures applied to control the disease was about \$30,000,000. During the past few years, most of the countries of continental Europe, excepting Scandinavia, have had to keep up a constant, difficult and expensive warfare against foot and mouth disease.

"In a district or a country where foot and mouth disease exists there prevails, and must continue, until the disease is eradicated, a state of unrest and uncertainty with relation to all operations affecting live stock. No one can foresee when his herd will be attacked, every animal brought to premises where the disease has existed is liable to develop the disease; any purchase, not only of animals of susceptible species, but of hay, straw, manure or even grain, if in bags that may have been on infected premises, may introduce the contagion. The combined unrest, annoyance and loss that result under such circumstances destroy all security and profit and lead to a great restriction in cattle trade and cattle keeping. Instances are numerous, in other countries, in which owners of pure bred herds have discontinued breeding, and have sold their cattle, as a result of loss and discouragement from this disease.

"So long as foot and mouth disease prevails in this country, the permanence of our export trade in live cattle and sheep is in jeopardy. Experience shows that English restrictions on such

shipments will be continued until the last trace of disease has been eradicated. These restrictions result from the fear of English farmers that their country may become reinfected and that the memorable and terrible losses they have suffered from the ravages of this disease may be repeated. Great Britain has been free from foot and mouth disease since 1901.

"THE CAUSE OF APHTHOUS FEVER has not yet been isolated but the properties of the virus of the disease have been studied. It is known that this virus may retain its vitality and virulence in a stable or a manure pile for as long as six months, that it will withstand freezing, and that it may be destroyed by disinfectants. Dark, damp places are most suitable for the prolongation of its life. The virus appears, also, to live upon or in the bodies of recovered animals for several months, so that such animals are a source of danger if they are permitted to come into direct or even indirect contact with susceptible animals. Fleming reports a case wherein the virus of aphthous fever retained its virulence for four months in a feeding trough exposed all of this time to the weather. He cites another instance wherein the virus persisted five months in a hay rack that had been used by diseased cattle, and the infection was carried in this hay rack to cattle on another farm to which it was taken.

"THE VIRUS OF APHTHOUS FEVER SPREADS more easily than that of any other known disease of cattle; it is carried most readily and most surely by affected animals, or by animals that have come from infected herds or premises. It may also be carried, and in numerous authenticated instances has been shown to have been carried in hay, straw, grain, manure, stable utensils, blankets, bags, etc., from premises where diseased animals have been. It is also carried upon the hands, boots or clothing of persons who have been on infected premises. Small animals may transport the contagion just in the way it is carried by inanimate objects, so that it is necessary to guard against the spread of infection by dogs, cats, poultry and pigeons. There are numerous examples of the carriage of infection long distances wherein all means of communication excepting by birds have been excluded.

Bolz reported in 1904 a case wherein the virus persisted in a manure pile for six months and caused a new outbreak when cows came in contact with the scattered manure. In the past outbreak in Pennsylvania some cows became infected while walking across a railroad unloading platform over which some exposed cattle that later developed foot-and-mouth disease had passed some hours before; these cows were later placed among other cattle and infected those herds.

"Calf buyers and cattle dealers who go from farm to farm and from herd to herd have often carried infection, presumably upon their boots or clothing. Such persons may unknowingly come in contact with the disease in its earlier stages or in its later stages and may fail to recognize that the animal is sick and that they are exposed and then may carry the seeds of disease to other premises. During outbreaks of foot-and-mouth disease, visits of perambulating cattle dealers, of castrators and of careless cow doctors are particularly dangerous. There is, however, no danger from the visits of veterinarians who observe certain precautions.

"The State Livestock Sanitary Board has issued the following instructions to its agents who are engaged in work on the control of foot-and-mouth disease:

"1. If there is any reason to suspect that any animals are affected with foot-and-mouth disease in a herd that is to be inspected, the veterinarian should wear special clothing provided for this purpose. If, by chance, a veterinarian should come in contact with an animal affected with foot-and-mouth disease when he is not clad as described below, he must at once disinfect his hands, boots and clothing as well as possible and remain away from the vicinity of healthy cattle, sheep, goats or swine until after all of his clothing has been disinfected by fumigation.

"2. Special clothing for use in the examination of animals affected with foot-and-mouth disease consists of a coat with a smooth rubber surface and so long as to come within ten inches of the ground; rubber boots with extension tops to extend up

the thighs; rubber gloves and a rubber hat or a cotton cap, which, after use, may be soaked in an antiseptic solution.

“‘3. In using the special clothing mentioned in paragraph 2, the tops of the boots should be drawn up, the coat should be tightly buttoned and the sleeves should be closed at the bottom over the wrist of the rubber gloves before the veterinarian enters the premises where the infected animals may be. Before entering the premises, it is invariably necessary to provide and have ready for use a solution of bichloride of mercury, one part to five hundred. After entering the infected premises, the rubber coat must not be unbuttoned (nothing can be taken from the pocket) until after the clothing is disinfected as provided in the paragraph following.

“‘4. When the veterinarian leaves the building or pen occupied by the affected animal or animals he should first disinfect his rubber gloves and the entire surface of the coat by washing with a sponge and the antiseptic solution. He will have to have help to wash off the back, shoulders and sides of the coat. Special attention should be given to the removal of infectious material that may have lodged on the front of the coat or the sleeves. After the coat has been cleaned, it may be removed, then the boots should be washed from the top down to and including the soles and heels, after which the hat should be washed or soaked in the antiseptic solution. Lastly, the rubber gloves should be removed and the clothing put away in a suitable case or bag. The whole kit is to be fumigated with formaldehyde at the close of the day's work.’

“Cattle hides, calf and sheep skins, wool, milk and the carcasses of slaughtered diseased or exposed animals may convey contagion. Infested stock yards and stock cars and the manure they contain are sources of disease.

“THE VIRUS MAY BE TAKEN UP by exposed animals through the digestive or respiratory tract, or infection may result from inoculation upon the skin or into the blood stream.

“THE PERIOD OF INCUBATION, or the interval between exposure and the occurrence of the first symptoms, is usually from

two to five days. This time may, in exceptional cases be as short as twenty-four hours and it may be as long as twelve days.

"THE SYMPTOMS develop in a rather regular manner and so it is possible to divide the disease into stages.

"THE FIRST STAGE begins with more or less dullness and inappetenance and is accompanied by fever. The temperature may not be more than 103 F., or it may be as high as 105 degrees to 107 degrees F. This stage is characterized, at first, by dryness and warmth of the muzzle, by a dry, hot mouth, evidence of discomfort of the mouth as shown by slow, careful chewing, by some awkwardness in grasping food, and by grinding the teeth. If an effort is made to examine the mouth it is held tightly closed. Very soon the mouth becomes unduly moist from the increased secretion of both mucous and saliva. As the tenderness and pain increase, the animal works the tongue and cheeks and makes a sucking, clicking or smacking sound. There is considerable accumulation of saliva in the mouth, some collection of froth about the lips and strings of sticky saliva may descend from the mouth. This condition is more striking at a somewhat later period of the disease. It soon becomes apparent that it is painful for the animal to take up food with the tongue and lips and if hard, solid food is taken, as half of an ear of corn, the head is held high and to one or the other side, so that the corn will gravitate to a less sore place in the back of the mouth, where it may be crushed and then swallowed. Not infrequently such a mouthful will be dropped after the pain it causes is experienced. Sometimes during this stage, or perhaps, not until a day or two later there is evidence of soreness of the feet, as shown by a tendency to shift the weight from one foot to another, by a quick tripping or jerking motion or by an inclination to lie down more than is usual. The first stage lasts one, two or three days.

"THE SECOND STAGE, or that of eruption, is characterized by the occurrence of vesicles, appearing as water blisters, in and about the mouth, about the feet and upon the teats and udder. For the mouth eruptions, the favorite seats are the following: The ends and margin of the pad; the tip, borders and top of the

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tongue; the front and face of the pad; the inside of the upper lip; the inside of the lower lip; the borders of the lips; the muzzle; the lower surface and the fraenum of the tongue; the gum and the lower jaw; the inside of the cheeks, and the roof of the mouth. Vesicles may appear about the nostrils.

“Vesicles or blisters appear upon the feet between the hoofs, especially at the front of the cleft; about the coronary band, about the base of the supernumerary hoofs and upon the heels. The vesicles upon the teats are more frequently seen about the orifice and may almost cover the teats, and sometimes occur on the skin of the udder. This condition causes much pain. The opening of the teat may be closed by inflammation and swelling resulting from the eruption. Vesicles appear first as small elevations of the superficial layers of the mucous membrane or skin, from $\frac{1}{8}$ to $\frac{1}{2}$ inch in diameter. They are of grayish color. Vesicles may not become larger or they may increase in size to an inch or more in diameter, or several may become confluent and loosen and raise up an area several inches in diameter. Such extremely large blisters occur upon the tongue and muzzle. The vesicles contain at first a clear, straw colored serum which later becomes cloudy. The membrane covering them is thin and it soon breaks. When the vesicles break, the loosened epithelial or epidermal layer remains for a time attached at the borders, forming a pocket, and, as it tears more, the loose shreds of membrane hang about the borders of the denuded area until these become detached and fall away.

“Vesicles usually appear first in the mouth and almost simultaneously, or a few hours or a day later, on the feet and udder. Sometimes the vesiculation is observed in but one location. In cattle, it is the mouth that it is most likely to show lesions, while among sheep and hogs the lesions may be confined to the region of the feet. Vesicles may be few and small or they may be large or numerous. The resulting discomfort and constitutional disturbances are usually in proportion to the extent of the primary eruption. The affected areas are exceedingly sensitive and painful.

"As the vesicles form, the fever abates and when the vesicles rupture, the temperature falls nearly or quite to normal. The subsequent course of the disease is free from fever, unless there is very extensive local inflammation. Vesicles rupture very soon after they form, especially in the mouth, where the membrane covering them is softened by moisture and sustains violence from the constant motion of the tongue, cheeks and lips. About the feet and upon the teats, the vesicles last longer. The second stage lasts one to three days.

"THE THIRD STAGE, or that of erosion, is characterized by the appearance of raw, denuded surfaces that result from the peeling off of the outer layers of the mucous membrane or skin that have been undermined, loosened and raised up by the fluid within the vesicles. The raw surfaces thus exposed are a bright, rosy red or even scarlet color. They are bounded by a clear cut, abrupt margin and are slightly depressed below the level of the surrounding surface. The surface of the sore is at first smooth; afterwards it is covered by granulations and later by fluid pus or by a more or less tenacious dirty-yellow colored exudate. The surface of the erosion, if upon the cheeks or tongue, may show red, naked papillae denuded of their epithelial covering.

"The soreness of the mouth is in some cases sufficient to prevent the animal eating or drinking for several days, perhaps for a week. Under these circumstances, milk flow ceases and emaciation is rapid. If excessively sore feet add to the discomfort, constitutional effects are more marked. Pregnant animals may abort. In many instances, the udder becomes inflamed, especially in fresh cows, and may be permanently damaged or ruined. There is often irritation and discharge from the eyes and nose. Many animals cough, revealing irritation of the bronchial mucous membrane or of the throat.

"The disagreeable sensation and the pain of the mouth may cause the animal to work the tongue and jaws and to suck and click the cheeks and tongue in such a way as to make a peculiar (but not wholly characteristic) smacking sound. There is frothing about the lips and drooling of saliva.

" The effect of this disease upon milk secretion is shown by the following record of the yield of a herd of thirty-two milking cows (some nearly dry) in Montour county, Pennsylvania. An infected bull was brought to this farm October 27, 1908; the first symptoms among the cows was observed in one animal November 3d, after which the disease developed rapidly in the herd until all were affected.

" Date.	Pounds of Milk.
October 31st	465
November 1st	468
" 2d	437
" 3d	440
" 4th	430
" 5th	378
" 6th	240
" 7th	168
" 8th	156
" 9th	85
" 10th	62

" The third stage lasts from five to ten days, or about a week.

" THE FOURTH STAGE is the period of healing. Preliminary to healing, there may be some corrosion and sloughing, during which erosions develop into deep and extensive ulcers. In most cases, however, healing begins rather promptly and continues rapidly. The erosion gradually closes in from the border and becomes smaller and smaller until it disappears. When healing is taking place the periphery of the sore area is of a gray or yellowish-gray color, and one frequently finds a yellow and rather tough deposit upon the unhealed surface. When this is removed, the base of the sore is found to be of red color.

" THE AFTER EFFECTS OF FOOT AND MOUTH DISEASE are sometimes very marked and of long duration. Dr. Salmon has reported that during the outbreak of 1902-1903 in New England a few herds that had passed through the disease were left. In

about one-third of these cases the owners afterwards asked to have their cattle destroyed, as the cattle were unprofitable or relapses had occurred. Herds that have passed through foot and mouth disease are frequently left in an unthrifty, debilitated condition. This is especially true of dairy herds. Young cattle, dry cows and steers are less severely affected.

“There is a malignant form of foot and mouth disease in which the mortality is high. Outbreaks of this type of disease, in which from ten to fifty per cent. of the attacked animals died, have been reported from several foreign countries. Complications following foot and mouth disease are numerous; they consist of abscess formations about the feet, sloughing of the hoofs, abscesses of the udder, garget, gastro-intestinal catarrh and blood poisoning.

“When infected herds are not destroyed but are kept, the premises remain infected for a considerable time and it is impossible to disinfect the premises as long as the live animals remain as these animals may continue to distribute the seeds of the disease and may reinfect the clean premises a long time after the symptoms of foot and mouth disease have disappeared. An attack of foot and mouth disease does not necessarily confer lasting immunity. The increased resistance to infection that follows an attack may continue for one to two years or longer, but it may not endure more than six months, and instances have been recorded wherein animals have passed through two, three, four and even five attacks of foot and mouth disease. Some animals have contracted the disease a second time within two months.

“THE DIAGNOSIS of foot and mouth disease is not a difficult matter where the disease is discovered in its earlier stages in a herd of animals. When one animal is affected or where the disease has reached a late stage of development there is often difficulty in distinguishing foot and mouth disease from some other condition. There is also difficulty with relation to shipped and market animals brought together in large numbers.

“The conditions that are most likely to give rise to error are those due to accidental injuries to the mucous membrane of

the mouth and a form of inflammation of the mouth caused by fungi, known as mykotic stomatitis.

“Wounds, or external injuries of the mouth, are sometimes seen as ulcers upon the edge of the pad opposite the lower incisors. These may be of the shape of the edge of the incisors and manifestly are toothcuts. Such toothcuts may become infected, causing a small ulcer of irregular shape, and sometimes from such a wound there is a cross infection to the inside of the upper lip. Injuries to the tongue, gums or roof of the mouth may be caused by hard, rough objects taken in with the food. Such injuries usually appear as cuts, tears or scratches and not as flat erosions.

“From close grazing, especially on a stubble field, cattle may wound the muzzle and lips, or the lining mucous membrane of the lips. Such wounds show as scratches or punctures, or as rough, abraded surfaces; they do not have the appearance of erosions and do not have the bright, red color that is characteristic of the lesions of foot and mouth disease.

“There is another form of injury that requires special mention. Cattle shipped by rail and that have been in the cars for a long time, with little or insufficient food and water, have a tendency to lick and to gnaw the wood work of the car. From this they may sustain injury to the inside of the upper lip and the mucous membrane covering the front of the upper jaw. Sometimes the tongue is rubbed. These injuries appear as defects of the mucous membrane of irregular shape and size, brownish color and rough surface. They may be overlaid with brown, thin crusts. In examining such a lesion, it is well to wash it off with water, whereupon it will be found that the surface is stained and discolored and that it is of rough, warty appearance and looks ‘dead,’ in contrast with the bright red and ‘blooming’ lesion of foot and mouth disease. In such cases the mucous membrane of the mouth is likely to be pale and there is little if any salivation, in contra-distinction to the injection of the mucous membrane and excessive moisture in foot and mouth disease. It is to be remembered that in foot and mouth disease the epithelium is lifted up, leaving a smooth surface below, whereas in these

traumatic defects there is a mechanical tearing or a dry mortification, leaving a rough, irregular surface. This form of traumatic stomatitis is not accompanied by any evidence of foot and mouth disease upon the feet or udder. One may find, however, in cattle that have been shipped a long distance a certain amount of stiffness and lameness, and if they have been standing long in foul cars or stockyards there may be some irritation between the hoofs.

“In mykotic stomatitis, there is no preliminary vesicle formation; a distinct layer, as a false membrane, develops upon the surface of the mucous membrane, and the disease is not contagious, although a large proportion of the animals in a herd may be similarly affected, having been exposed to the same conditions.

“One must also distinguish between foot-and-mouth disease and ergotism, foot-rot and foul-claw, and between foot-and-mouth disease and cowpox.

“The animal that has passed through an attack of foot and mouth disease may be recognized by the presence of unhealed ulcers. These, in their last form, may appear only as small red depressions or as yellow spots. Very slightly depressed areas covered by clean mucous membrane, may be seen upon the dorsum of the tongue. Such spots following erosions of aphthous fever have sharply defined borders and the papillae covering them are more slender, shorter and whiter than upon the surrounding membrane. The spots may be circular and small, or they may be of irregular shape and cover half of the dorsum of the tongue. The healing of an ulcer at the tip of the tongue—a frequent seat—may leave a little puckering of the membrane. Yellowish scars or puckering of mucous membrane about the margin of the pad and within the upper lip may remain from the healing of ulcers of aphthous fever.

“The soreness of the feet and slightly excessive moisture between the digits may remain after the mouth lesions have healed. Sometimes, after extensive eruptions about the feet, the hoof horn develops a ridge similar to that seen on the hoof of a horse that has suffered with laminitis. There may be a partial separa-

tion of the horn from the coronary band, especially at the heels.

"It is necessary to hold suspected animals in quarantine until doubt can be removed. In some cases information useful in deciding as to vague and indefinite conditions may be obtained by exposing or inoculating a susceptible animal. In Pennsylvania such inoculations are by law prohibited excepting when made by authority of the State Livestock Sanitary Board.

"THE PREVENTION OF FOOT-AND-MOUTH DISEASE is a difficult matter on account of the virulence of the disease, the ease with which the contagion may be transported and the vitality of the virus in the bodies of apparently recovered animals and in places that have been contaminated by diseased animals.

"In former times, attempts to control the disease were regarded as hopeless and when aphthous fever appeared in a locality it was the custom of cattle owners to inoculate their animals and put them through the disease as quickly as possible. They simply accepted as inevitable the loss of a large part of the value of the herds and flocks in infected regions.

"The methods of prevention that have been practised have consisted: First, in general restrictions on trade in animals of susceptible species and their products and the products of farms in infested districts, and the quarantine of infected herds and premises until danger shall have disappeared; or, second, in the method now being practised in Pennsylvania, consisting in the destruction of infected herds and the complete eradication, with the greatest attainable promptness, of all known centers of infection.

"The method of control by quarantine has been practiced successfully in a number of instances. On the other hand, attempts to control foot-and-mouth disease by this method have often failed. It is exceedingly difficult to quarantine effectually against aphthous fever, and *to attempt to do so is to take great and unwarranted risks*. It is necessary that such a quarantine shall be exceedingly rigid, that it shall be faithfully observed to the minutest particular, and that it shall be of long duration. Otherwise, it is not effective, or sufficient to prevent the spread of

disease. As long as premises are under quarantine on account of foot-and-mouth disease there can be no feeling of security in the neighborhood, or even in distant places, on account of the remarkable facility with which this disease spreads. For these reasons, and as a result of considerable successful experience in the use of the "stamping-out" methods for the control of foot-and-mouth disease, there has developed, in recent years, a strong sentiment in favor of the application of the second method when the distribution of the disease is such as to denote that it may be successfully controlled and eradicated by this means. The "stamping-out" method was applied with complete success and at small cost, in proportion to the value of the work, in New England in 1902-3.

"If foot-and-mouth disease has been permitted to become very prevalent in a community, then it is not possible to eradicate it by the stamping out method, and the very long, troublesome and, in many respects, painful and oppressive method of controlling the disease by quarantine must be practised. This means that the work would drag on and quarantine restrictions would have to be continued for years. The successful application of the stamping out method, even at very large cost, is by far to be preferred.

"If the diseased herds are promptly slaughtered and the contaminated premises disinfected, quarantine regulations may be of relatively short duration. On the other hand, if the infected herds are held under quarantine for recovery, the premises they occupy are dangerous and may be a source from which the disease may spread for as long as six months, or perhaps longer, after the recovery of the diseased animals.

"THE CHARACTER OF QUARANTINE that is necessary for the control of foot-and-mouth disease is indicated by the following order of quarantine adopted by the Pennsylvania State Livestock Sanitary Board:

"Upon the discovery of foot-and-mouth disease, it is required that a quarantine shall at once be established of the affected animals and of all cattle, sheep, goats and swine that it is believed

may have been exposed. Premises or objects occupied or contaminated by affected animals or their products must be quarantined and premises may be quarantined where there is reason to believe that there may be danger of contamination by foot-and-mouth disease.

“ ‘ 1. Cattle, sheep, goats and swine under quarantine on account of foot-and-mouth disease must be kept absolutely and wholly separate and apart from all other animals, and all other animals must be kept wholly apart from quarantined animals.

“ ‘ 2. The quarantine is extended to animals other than those originally quarantined, if they are permitted to come in contact with quarantined animals or to enter quarantined premises.

“ ‘ 3. Persons caring for animals quarantined on account of foot-and-mouth disease must not, under any circumstances, come in contact, either direct or indirect, with other cattle, sheep, goats or swine.

“ ‘ 4. No animals shall be allowed to run loose or to go free on or near quarantined premises. This regulation covers domesticated animals of all kinds, including dogs, cats and poultry.

“ ‘ 5. If there are pigeons on a farm on premises quarantined on account of foot-and-mouth disease the pigeons shall be killed, or they shall be confined on the said quarantined premises until released by authority of an agent of the State Livestock Sanitary Board.

“ ‘ 6. If domesticated animals, dogs, cats, poultry or pigeons are kept at liberty or are allowed to go free so near quarantined animals or premises that they constitute, in the estimation of an agent of the Livestock Sanitary Board, a menace to the efficiency of the quarantine, such animals may be confined and placed under quarantine.

“ ‘ 7. Milk from diseased or exposed cows or milk produced in or on quarantined premises shall be placed in milk cans, or other receptacles that have covers that fit tightly. Formaldehyde shall be added to such milk in the proportion of one pint of formaldehyde (37 to 40 per cent.) to thirty quarts of milk. The covers shall then be placed on the cans or receptacle and the milk

and formaldehyde mixture shall remain in the cow stable, undisturbed, for not less than eight hours, after which it is to be poured into a pit dug in the manure pile and covered over with manure. Agents of the State Livestock Sanitary Board may authorize other safe methods for disposing of such milk.' ”

“ [Section 33, P. L. 928. 57. *Skimmed Milk, Etc., for Animals, to be Pasteurized.* Every owner, operator, or manager of a creamery, cheese factory receiving station, or skimming station, shall before returning to or delivering to any person or persons any skimmed milk or separator slop, to be used for food or feeding purposes for calves or swine, cause such skimmed milk to be thoroughly pasteurized by heating it to at least one hundred and seventy-eight degrees Fahrenheit. 1913, July 22; P. L. 928; Sec. 33.

“ The present outbreak of foot and mouth disease was spread extensively in Michigan and Indiana by unpasteurized milk from a creamery. Two similar outbreaks have occurred in Pennsylvania. It is extremely important that this section of the law should be carefully enforced and it is strongly urged that creameries or skimming stations should be equipped with means for properly pasteurizing all by-products before they are allowed to be delivered for food for calves or swine.

“ A circular was recently sent out by our Board giving instruction in reference to installing an economical but satisfactory system for pasteurizing milk for this purpose.

“ “ 8. There shall not be removed from quarantined premises, without specific permission in writing from an authorized representative of the State Live Stock Sanitary Board, any material, article or thing that is likely to or that may convey contagion, and, in particular, there shall not be removed from such premises any milk or milk products; diseased, exposed or quarantined animals; hay, straw, fodder, grain or other feed; manure, stable or milk utensils.

“ “ 9. Horses that are to be used must be kept in a stable separate from the buildings and premises under quarantine. Before removal to such stable the horses shall be thoroughly cleaned,

their feet and legs shall be disinfected and the halters and harness shall be disinfected.

“ ‘ 10. Persons caring for quarantined animals must not convey or permit the conveyance, from the quarantined premises, of articles, materials or things that have been in contact with, that are contaminated by or that may have been contaminated by diseased animals.

“ ‘ 11. All unauthorized persons are forbidden to enter quarantined premises or to come in contact with diseased or exposed animals, or with any object or thing that may have been contaminated by or from such animals.’

“ This quarantine is continued until the affected and exposed animals are killed and the premises disinfected.

“ In addition to quarantine regulations applying to affected farms, it is necessary to control the shipment of the cattle in and from districts in which foot and mouth disease exists, has recently occurred, or is suspected.”

THE AMERICAN HORSE SHOW.

The American Horse Show, which opened in Madison Square Garden, New York City, on Monday, December 7, in a deluge of rain, proved a great success during the week. The Garden never looked better, although the decorations carried out the red cross effect. The programmes, even, were sold by girls in the red cross nurse costume. Flower girls were also similarly costumed. Why not—it was a red cross show, the proceeds of which were for the relief of the unfortunates abroad. But the garden and the programme girls were not the real features, after all. The classes were superfine, and the competition of a high order indeed. The harness classes, the hunters, ladies saddlers and pony classes, in fact *all* classes, kept the judges on their job picking the winners. And above all, the spirit that prompted the show, the alleviation of suffering humanity was never lost sight of, no matter how keen the competition. And finally when every competitive effort had been put forth, the purses that were

won, were mostly thrown into the relief fund; showing that the competition was of the proper kind. We have not learned the amount realized, but trust it was a goodly sum.

THE DECEMBER ISSUE LATE: The reason for the delay in mailing the December, 1914, issue, was made evident on its receipt, in the matter contained in the added editorial page at the back of the book, relative to the postponement of the New Orleans meeting; but we wish to apologize to many hundreds of our subscribers for not answering their interested inquiries in regard to it. We did answer a few that came in the first week, but when it had not reached its readers by the beginning of the second week in December, they began to pour in, in such numbers, that answering them individually became a physical impossibility. We wish, in addition to apologizing, to say to our inquirers that their letters expressing how anxiously they looked forward to the receipt of their numbers each month, and how much they missed them when they did not appear at the accustomed time, were very gratifying and encouraging. We also would add, that if any of them have not *finally* received their December numbers, and will kindly drop us a second line, we will see that they are immediately supplied. The January number will reach you a little late, but after that we will get back to our regular mailing date.

VETERINARY CONFERENCE AT ITHACA, N. Y.: The annual conference of veterinarians, at the New York State Veterinary College at Cornell University, Ithaca, will take place this year on January 14 and 15, and Director Moore anticipates not only the *usual* success, but even greater achievements this year than heretofore. The programme was not ready at this writing, but will be out the first week in January. We are able to state, however, Prof. James Law will give a lecture on *Foot and Mouth Disease*.

KANSAS CITY VETERINARY COLLEGE QUARTERLY for December, 1914, received and, as usual, is full of nuggets.

ORIGINAL ARTICLES.

COLIC.*

BY ROBERT W. ELLIS, NEW YORK, N. Y.

The word colic, is derived from the Latin *Colicus* or the Greek, *Kolikas*, signifying the colon; and strictly employed, means a painful, spasmodic affection of the intestines, especially of the colon. (Reeks). Medical dictionaries define it as *acute abdominal pain*.

But veterinary practitioners have learned to recognize and appreciate a group of symptoms in the horse, the presence of which they term colic. Said symptoms indicating the presence of pain, or distention, or both, of some part of the digestive apparatus—be it stomach, small or large intestines. These symptoms are due to many indirect and one direct cause, and must be combatted according to the cause in each case. The direct cause is arrested or imperfect digestion, and the indirect cause, is anything that has been responsible for the arrested or disturbed digestive process. The point at which the arrest or disturbance takes place, characterizes the form of colic the horse is suffering from. That digestive derangement is especially easily brought about in the horse, is readily recognized by all veterinarians, due to the peculiar arrangement of the digestive organs, and the fact that the horse subsists entirely on an uncooked vegetable diet, causing fermentation to immediately follow an arrest in the digestive process; so that no time need be devoted to a consideration of that phase of the subject. Let us rather make a clinical survey of the subject, passing rapidly from one patient to another affected in the different manners that they present themselves to us in our daily practice. Our first case is one in which the trouble has begun at the first resting place of the food after it

*A paper presented to the New York State Veterinary Medical Society, at Rochester, August, 1914.

has been swallowed. We come into the presence of a horse that is sleepy, dull, and stupid; and although the abdomen is more or less distended, the horse is not in pain. Some will persistently stand with the head resting upon the manger, oblivious to their surroundings; perhaps snoring from the partial closure of the nostrils by pressure against the manger. Others will prefer to lie; but are perfectly quiet, sleeping, and evincing no pain. While still others show symptoms of vertigo or staggers. Inquiry elicits the information that the horse is a "hogish" feeder, that he has gotten loose in the night and torn open a bag of oats and nearly cleaned up its contents. Or being left in the stable for the day has gotten loose and cleaned all the oats out of the mangers that the other horses in the stable have left. In short he has gorged himself. And in the absence of retching, eructation of gas, or pain, you make a diagnosis of engorged stomach.

In this case, digestion has not strictly speaking been arrested, because it has not been begun, it has simply been deferred owing to mechanical reasons. The walls of the stomach are over-distended, and its physiological function temporarily suspended. The prognosis in these cases, from my observations is usually favorable.

Treatment. Appreciating the fact that fermentation of that mass would mean serious trouble, our aim is to prevent that complication and bring about the removal of the material as soon as possible. In storing away new hay in the hay mow, salt is employed to arrest fermentation until the excessive moisture and heat of the new-mown hay has been evaporated. It is a preservative against fermentation. In the same way we employ it in the case of an engorged stomach in the horse. We desire to conserve the favorable conditions we have found (*i. e.*, absence of fermentation), while bringing about removal of the mass. We therefore begin treatment by the administration of salt. A half pound may be given in solution; and remembering that we already have over distention we use as little bulk as possible in the drench. This salt drench also plays another rôle in the horse's stomach that it has not an opportunity to display in the

hay mow; it has an excito-secretory action. Where the engorgement seems to be excessive, it is sometimes advisable to give the drench (which is probably a quart) in small repeated doses. Say two ounces at one-half hour intervals, administered with a syringe until the whole amount is given. In addition to the sodium chloride, tincture of nux vomica in one dram doses every hour should be given, and just as soon as room seems to permit, the administration of raw linseed oil is indicated. The patient should be aroused from his lethargy and kept moving about to aid circulation and assist in re-establishing the peristaltic function. Copious enemas of warm water are also valuable aids in that respect. Our second case is more alarming. A horse that has recently eaten his evening meal is seized with violent colicky pains, which have responded momentarily to a dose of colic mixture given by the owner, but come on again, seemingly less severe but persistent, and gradually getting worse, until at the time of our arrival he presents a very alarming picture: bathed in perspiration and his countenance depicting intense agony.

It is with great difficulty that he is kept upon his feet sufficiently long to administer a dose of medicine. Others will present all the agony of countenance, but persistently stand, apparently awaiting the end. The respirations are catchy, painful and gasping, the pulse weak and rapid. There is an involuntary regurgitation in the œsophagus, but no gas is emitted per orum. The animal may lie down with care, then raises himself on his fore feet and sits up like a dog, and we realize that we are in the presence of a case of *Gastric Tympany*, and that our patient is in a serious and dangerous condition, calling for immediate relief if his life is to be saved. What are the immediate demands? Obviously the removal of the gas from the stomach, and the prevention of the formation of more. As there is almost always present tympany of the abdomen to a greater or less degree, the use of the trocar in the flank is frequently resorted to with the removal of a certain amount of gas, but without the result of giving relief to the patient. So that those who are proficient with the use of the stomach tube, resort to its use in

this class of cases for the direct removal by mechanical means, of the gas from the stomach, and by means of the same instrument, the introduction into the stomach of materials for the prevention of further gas formation. Others administer, chloral, carbonate of ammonia, bicarbonate of soda, charcoal, etc., in capsule per orum and eserine or arecoline hypodermically. These materials tend to prevent the formation of gases and the eserine or arecoline (I prefer the latter), tend to remove the gas from the stomach, and pass it along into the large intestines, where there is more room for it and where it will be much less harmful. That this takes place is evidenced by the fact that frequently an hour after that line of treatment we are able to get gas at the flank with the trocar that we could not get at the beginning. I have used to great advantage a material of which I regret to say I do not know the chemical composition; it is known commercially as *Nitrox*. I give one or two capsules of it dry, at the same time that I give the chloral. All these capsules are given before the arecoline is administered to avoid the difficulty in administering resulting from the salivation after the use of the arecoline.

If the case does not respond to this first treatment, a little later capsules filled with spirits of turpentine, oil of peppermint, fluid extract of cascara, etc., are administered with gratifying results. A guarded prognosis must be given until the alarming symptoms have subsided. Our next patient presents symptoms quite commonly met with, and while sufficiently alarming at times, and frequently fatal, still, on the whole presents a more hopeful outlook than the preceding one, because mechanical relief is more easily accomplished. Here we find the horse with abdomen distended, the skin stretched to drum-like tenseness, and the animal in variable degrees of distress from that approaching asphyxiation, to moderately labored breathing. We have before us a case of *Intestinal Tympany*. The diagnosis in this case is so simple that we will not dwell upon it. The treatment also is simple; and yet, if muddled or started wrong we are liable to lose our patient. If the conditions are such as depicted,

the immediate use of the trocar, before any form of medication, is proper and imperative. Many cases really require nothing else; but it is well in any case to use anti-ferments, and, where indicated, stimulants, etc. Milder cases respond to the use of rapid evacuants without the use of the trocar, followed by the anti-ferments and stimulant treatment. Our next patient does not cause the owner much anxiety, but to the trained veterinarian it forbodes trouble. The horse has had a diarrhoea, which has ceased without treatment, but he continues to be uneasy—manifests dull persistent pains; the mouth is dry and sticky, and the breath offensive. Lies down and remains quiet for a considerable length of time; but as the condition increases, he lies down and gets up more frequently, refuses to drink water offered to him, and shows a more or less tucked-up appearance at the flank. Examination per rectum probably finds it empty, or containing some soft material, or an odd-formed ball or two of fecal matter. These symptoms, we were early taught to interpret as *Impaction* or *Obstruction of the Small Intestines*, and treatment directed to overcome that condition is usually rewarded with good results, although considerable patience on the part of the veterinarian and the owner is required, as relief is brought about by a slow process. The indications for treatment are the relief of pain, the softening of the obstruction and the re-establishment of peristalsis in the intestine involved.

The administration per orum of a quart of raw linseed oil containing two ounces of turpentine and one-half ounce each of tincture belladonna and nux vomicae is the first procedure, followed by two dram doses of tincture of nux vomicae at three hour intervals, and at the end of twelve hours an aloes ball. In the meantime, if the pain has ceased (which frequently follows in three to four hours after giving the oil) a hypodermic injection of arecoline one-half to one grain is advantageously employed. As the horse usually refuses to drink; when we feel that water would be such an advantage to him, much benefit can be derived from the frequent administration, all through the day and night, of flax seed tea given as a drench, so that one and a

half to two pails are given in the twenty-four hours. A large percentage of cases of impaction of the small intestines will gradually respond to that line of treatment, augmented by high enemas; although they may require from four days to nearly twice that long to accomplish it. Where cases do not respond, or seemingly respond but eventually terminate fatally, I am inclined to think from observation, in the light of present day knowledge, that we have erred in our diagnosis, and are dealing with a condition that has recently been recognized, in which, to my mind, there is a considerable similarity of symptoms. In view of the fact that it is a recently recognized condition, I will consider it at the end of my paper. Our next patient is similarly affected, in which perhaps the pains are more dull at the onset, although they become very marked as the condition progresses. I refer to *Stoppage of the Bowels or Impaction of the Colon*. Authorities on the subject, who have had considerable opportunity for post-mortem study, can describe symptoms to apply to each particular portion of the large or small intestines in which the stoppage has occurred, but I do not think the average practitioner can so differentiate. For myself I am content to locate it in either the large or small intestines and will not theorize here on subdivisions which you can read in your text books. The symptoms in obstruction of the large intestines do not seem to me to be so clearly defined as in that condition in the small guts. As stated the pains at the onset are decidedly dull, and the owner hesitates to call a veterinarian; but as they persist and seem to increase in intensity, causing the horse to crouch, walk around the stall if in a loose box, make repeated attempts to lie down but catch himself before getting really down, the owner becomes alarmed and the veterinarian is called at that stage. The pains come to an end and repeat themselves at intervals—the horse sometimes holding his breath for a time, during the paroxysm. Rectal examination shows that bowel to be empty usually or containing a few mucus-covered balls—sometimes it is ballooned, and there are violent straining efforts on the part of the horse, as though trying to pass manure. In other cases we find the rectum in a state of impaction. We

empty it and can appreciate impaction in portions of other parts of the intestines that are seemingly crowding backward by the expulsive efforts. In severe cases there is patchy perspiration, and short catchy breathing. The pulse and respiration are our best guide as to the outcome. These cases call for practically the same treatment modified to fit the conditions, as suggested for obstruction of the small intestines, except that irrigation plays a more potent part, in my opinion, as fluid can more readily be thrown in the desired place. It is understood that in these obstructions I am dealing strictly with fecal matter, as time would not permit entering in the discussion of calculi, hair balls, torsion, intussusception, etc. Neither will I discuss enteritis beyond expressing it as my opinion that in a case of enteritis, correctly diagnosed to be such, there will be a fatal termination. So I will now consider briefly, as my knowledge of it is necessarily limited, a condition of colic in horses that has recently been recognized that is of vital interest to us because of its gravity. I refer to *Impaction of the Caecum*. Described first by Professor Gofton, of the Royal Dick Veterinary College of Edinburgh, and discussed by him in a paper presented to the Scottish Metropolitan Veterinary Association in May, 1912, it was first described by an American veterinarian in an article entitled *Equine Typhlitis With Impaction*, by Willis Wilson, of Dayton, Washington, and published in the May, 1913, issue of the AMERICAN VETERINARY REVIEW. The following year another American veterinarian, A. T. Gilyard, presented a paper to the Connecticut Veterinary Medical Association, under the caption, *Impaction of the Caecum In the Horse*, published in the AMERICAN VETERINARY REVIEW for March, 1914; after which, Dr. Gilyard read Dr. Wilson's article, published ten months prior to his own, and immediately made another valuable contribution to the literature on the subject, including a method of treatment, which article was published in the AMERICAN VETERINARY REVIEW for April, 1914. In those three articles is included the writing to date on this important condition by American veterinarians. Since the publication of these articles, I have been on the lookout for this condition, and feel that I have met it in a few fatal

cases of colic, and also feel that in years past, a few long-drawn-out cases of supposed impaction of the small intestines that finally terminated favorably were in reality *Impaction of the Caecum*. Some of the symptoms in common are the dull pains, the long intervals of quiet lying upon the left side, occasionally lifting the head in the direction of the right flank, diarrhoea preceding the attack, and the bad smelling clay-like passages when bowel movement has been established. One diagnostic point mentioned by these authors is that in caecal impaction full copious purging does not relieve the patient as in ordinary impaction, but leaves the horse in just as much distress as before, because nothing has been removed from the *cul-de-sac* formed by the caecum. Where relief is not obtained, death usually results from a rupture of the organ at its base, due to distention. This peculiarly shaped intestine, a little over three feet in length and with a capacity of about seven and one-half gallons of fluid serves the purpose of a sort of reservoir, in which the water that the horse drinks is received directly from the stomach, through the small intestines; reaching the caecum within a short time after ingestion by the horse. The caecum is said to be filled at all times (in health) with a pea-soup-like fluid, which is probably the nutriment from the food ready for assimilation; the solid matter passing through the digestive tube, going directly from the ileum to the colon without entering the caecum. It would seem that when such a condition of affairs does *not* exist, our patient is exposed to the dangerous condition of impaction of the caecum and death from rupture of that organ.

Forming, as it does, a *cul-de-sac* hanging below the line of the canal through which the solid material passes, and seemingly dependent upon the physiological perfection of the act of passing the material from the ileum to the colon without its getting into the caecum, that organ would seem to be a constant menace to the horse's safety, whenever disturbance of the digestive function manifests itself. It suggests a gigantic appendix. In experimenting with caecums removed from dogs, I have found that water injected into the ileum will pass directly to the colon without entering the caecum; but injected into the colon

it does not pass directly to the ileum, but goes down into the caecum; which has suggested the possibility of caecal impaction being a secondary condition, due perhaps to obstruction of the colon. Whatever the cause, it would seem that with the premonitory symptoms and those referred as indicating dull pains and the opportunities for rectal examination, a diagnosis can be arrived at fairly easy. Now what is the prognosis? We know so little about this condition as yet, not knowing positively how many cases of the kind we have had, how many of them we have lost and how many we have saved that a prognosis seems difficult to arrive at, but must at least be guarded and somewhat grave. Dr. Willis Wilson says he saved forty (40) per cent. of his cases and treated on an average fifty a year. It will depend upon what degree of perfection in the line of treatment can be formulated. In as much as that this bowel in a normal state contains only fluid it would seem that the indications for treatment are to irrigate, with the object of softening up the impacted mass and if possible rendering it fluid. How is this to be done? Dr. A. T. Gilyard, in his article in the April REVIEW, suggested the introduction of the trocar through the abdominal wall, and by the means of a rubber tube attached to it introduce as much water as you desire directly into the caecum and cites a case in which he employed that method, pumping seven and one-half gallons of warm water in, in which had been dissolved one-half pound of sodium chloride and a pound of magnesium sulphate, with the emptying of the caecum as a result, although the patient subsequently died. Probably that procedure and the treatment suggested for ordinary impaction of the intestines would be the proper line to pursue.

I have been wondering too if the lock injection syringe, that does not permit water to escape when pumped in, would not find its way to the caecum once the colon was filled. That of course would necessitate the injection of a very large quantity of water. As my whole paper is made up of suggestions resulting from my observations, and open to criticism, I shall hope for a solution being offered for this as well as the other less grave conditions referred to. I would like to say, however, before

closing my paper with a few remarks on prophylaxy, that I would insist that it is every veterinarian's duty to make a rectal examination of every colic case that he is called upon to treat; and failing to do so, he has failed in his duty to his patient, his client and himself. Reason for this stand will come out in the discussion.

Now in regard to *prophylaxy*, it has occurred to me that in its relation to "colic" this treatment does not cut much figure with the average veterinarian, although advocated and practised in connection with other conditions. And yet colic claims more victims than any other malady to which the horse is heir. I believe then that it is our duty to study the causes of colic and advise our clients how to prevent it; or at least lessen its occurrence. A three hundred and fifty dollar horse in perfect condition this morning is hauled out dead to-morrow morning. Can we not do something to prevent this fatal malady? Obviously it has to do with the method of feeding! Professor Gofton has suggested that the habit of *not* watering again after the evening meal was a *cause*, as it occurred much less often when that practice was ceased in the stable, and the custom was changed to watering later in the evening, after the evening meal had been eaten. An acquaintance of mine, a well qualified, thinking, veterinary practitioner, has come to an exactly inverse conclusion, and would have the horses watered *before* feeding and not again until before the morning meal, on the theory that the ingestion of water after feeding tended to interfere with digestion by washing the gastric juices out of the stomach before they had completed their work, together with part of the ingesta, into the intestines, where fermentation and colic resulted. This same veterinarian advocates frequent watering through the day, while the horse is at work and letting them drink all they want on their return to the stable at night without first cooling out; then feed and not allow them to drink again until before feeding in the morning. His theory about letting them drink all they want on returning in the evening is that having been watered at frequent intervals all through the day they will not drink too much at this time. My plan is to let a horse have water frequently during

the day and not watering for at least two hours after feeding, believing that the water entering the stomach, especially if very cold, will interfere with digestion, even if it does not remain there long but passes on to the caecum. I believe in having a heated horse cooled out before feeding, believing that the stomach of an over-heated horse is not in condition to digest food. I believe, too, that fatigue interferes with the flow of the gastric juices and therefore that a feed taken by a tired horse is likely not to be thoroughly digested, and colic through the fermentation of the food results. So I would permit the horse to drink all he wants before feeding in the morning, filling up the caecum then two hours after feeding, more water keeping the caecum full; the last drink of the morning being given an half hour before the noon feed. Two hours after the noon feed, water again, and so on up till time for the night feeding, half hour before which the caecum is again filled. Assuming that the horse is fed about six or seven o'clock in the evening, no water until twelve midnight. Standing quiet in the stall that will last him until the drink before breakfast. I do not favor cooked, steamed or wet feed; but prefer feeding clean oats of the best quality, with the addition of a little bran at night. Horses should have salt provided *ad libitum*.

In Professor Sisson's article in the July and August issues of the AMERICAN VETERINARY REVIEW, entitled *Some Mechanical Factors In Digestion*, he states that conflicting views have been expressed in connection with the effect of watering on the stomach contents, some claiming that the food will be washed out of the stomach, "hence the golden rule of experience that horses should be watered first and fed afterwards." Again the results of other observers that he quotes, was to the effect that when the stomach was filled the contents were only superficially penetrated by the water which passed over it into the small intestines and on to the caecum, but in the stomach only partly filled the contents were saturated with the water. And so I expect there will be differences of opinion here which I hope will be freely expressed, as I am deeply interested in the subject and feel sure that you can materially assist in its elucidation.

HORSESHOEING IN MANY COUNTRIES.*

BY W. J. KENT, NEW YORK, N. Y.

Before dealing with the title of this subject it may be well to go back to the time that man first thought it necessary to protect the foot of the horse, so as to make his use of more value.

Xenophon who was a horseman and soldier, along with his other accomplishments, advocated the use of leather soles, tied on with straps. On account of the improper adjustment of these straps this system for the protection of the foot was not long practiced.

There immediately followed another system which was composed of woven fibre soles, at the same period. As the use of the horse was evidently being more recognized the brain of man was working fast to find a better and more practical means to protect his feet, and they formed the idea of pouring tar on the sands, and walking the horse over it, so as to give him an artificial sole; this may have been a quicker way to have him shod, but it is doubtful if it were as practical as the others which I have explained.

The Romans were the first to use metal in the form of sandals, for this purpose, and it is stated that Nero, the Roman emperor, even used gold and silver on his horses' feet.

The Celts were the first to use iron turned into a shoe and attached to the hoof with nails, which form of shoeing is universally established to this day.

This brings us from a period where horseshoeing was in its crudest form to the present day, where it is classed as an art. Different countries have their different forms of horseshoeing, and rightfully so; as, let us take the human race, the shoe adapted for the arctic climate is not suitable for the tropical climate, and the same argument holds good for the horse.

* Read before the Veterinary Medical Association of New York City, December 2, 1914.

Let us start with Australia, a tropical and semi-tropical climate, where horses in my younger days were wholly used for commercial purposes as well as for pleasure; all horses are shod plain in front, and on the hind feet on draught horses a low heel is used; the feet are as a rule very round with a rather flat sole, but the horn is tough, on account of the majority of these horses being bred on the plains. Bar-shoes in front are common when the horse is in use for two or three years, as corns are almost universal when such feet are continually shod. Thoroughbred racing is continual all the year round, and the feet of these horses are carefully looked after from the time they are foals, by keeping them in shape with a rasp, never touching the sole of the foot, and rounding the edge of the outer shell so as to keep it from breaking. They run their race horses on turf barefooted, and very often, when the track is wet they have two nails driven in at the toe and clinched.

This system of late years has been superseded by the aluminum steel-rimmed racing plate, which only weighs from $1\frac{1}{2}$ to 2 ozs., covering all four sizes, and this form of shoeing, of this class of horses, has become very popular, especially since Carbine, one of the greatest of race horses, won the Melbourne cup, shod with these plates.

Being a born Australian and having learned the trade of horse-shoeing in that country, starting at it when I was thirteen years old, I am very familiar with all I have stated.

I took a trip from Melbourne to Cape Town, South Africa, when that country was a blank north of Natal; and although they have brought the art of shoeing at the present time to the ordinary European standard, at the time I was there the crudest kind of work was done, and I returned to Melbourne by the next sailing ship; not on account of what I have stated, but I did not like the place.

Tasmania, which is a large and very fertile island on the southwestern coast of Australia, has a great number of horses, and the form of shoeing is practically the same as that done in Australia.

New Zealand, which is about 1,200 miles from Australia, has a different breed of horses, especially for commercial purposes, Suffolk, Punches and Percherons, also the stocky cross breed predominates. This class of horses require a heavier and stiffer shoe. This is the first place I ever saw a toe-calk welded on a horseshoe, and I well recall stating, in my youthful ignorance, that the horse would break his neck, an hour after leaving the shop.

I still maintain, however, that they shoe their horses entirely too heavy for the work they do, as the climate, being of a damp nature, they having a large percentage of rain yearly, the hoof is soft and spongy, and cannot carry their heavy shoes for any length of time without encountering the many ills the horse's hoof is heir to. Common ordinary shoeing predominates in this country, as the majority of the population are by nature of the farming and commercial class; therefore there is very little variety in the art.

Coming up the Pacific Ocean, we will have to pass Samoa where I remained three months on the Island of Tutuila, which at that time belonged to the French. No horses were shod, as there were only a few on the island, and they went barefooted.

We next come to Hawaii—at the time Liliuokolani was queen. Horses even at that time were fairly plentiful on the island, and especially in Honolulu, where there were a few very good mechanics running shops. All the horses were shod plain, no toe or heel on either the front or hind shoes.

You must understand that up to this time I never saw either a machine-made finished horse nail nor a machine-made horseshoe. When I served my time learning the trade, we often had to split a Swedish piece of iron shafting into strips, beating it out into nail rod, and make our horse nails out of it. . . . Horseshoes we could make of anything, providing it was iron, and it was often our job to fold up worn old shovels and make horseshoes out of them; all old worn shoes were doubled over and new ones made from them.

From Honolulu I came to San Francisco; and it was there I first got a practical finished education in the art of horse-shoeing.

It was at the time when the American trotter and pacer were being developed for speed, and as you, gentlemen, are well aware, the shoeing of their feet had as much to do with the high state of perfection this distinctive type of horses have been brought up to, as the years of scientific breeding, that made them the peers of the world.

You are also so familiar with the different grades of shoeing which we have here in this country, that I feel it would not be interesting to you that I should spend any time in describing them; therefore we will pass this over with one of the broadest statements that ever came from a man, and I will make it from an unprejudiced mind without any fear of contradiction. America and American-born horseshoers lead the whole world in the science and skill of horseshoeing. Why any intelligent body of men should conceive in their minds the idea that any foreign-born man who grew into manhood and learned the trade of horseshoeing outside of this country, was more qualified to teach our youth this trade, that we in America have raised to an art, is beyond conception.

I will still go further and state we have American-born horseshoers that *can* and have shown all their boasted Europe the scientific art of horseshoeing; and until one of these men are selected as the practical head of any school which may be established for such a purpose, in this country, such schools are failures before they are started.

About sixteen years ago I went to Europe, having at that time a half interest in 12 patents taken out there—all on horseshoes and machinery for making them. At the time I was connected with an American Horse Shoe Co., who owned the other half, and the object of my trip was to form a company in England or lay the foundation of an export business from our factory here.

Landing in London, and having had previous connections with the late Sir Francis Evans, then member of Parliament, through him and Cecil Baring, of Baring Bros., the bankers, I had full *entree* to the Royal College of Veterinary Surgeons, at the head of which was Dean McFadcan and Prof. McQueen,

whose courtesy and friendship to me shall never be forgotten. I had samples of all the different shoes we manufactured, and among them some aluminum steel-rimmed shoes, especially adapted for army and thoroughbred race horses.

I demonstrated the usefulness of these shoes by shoeing a number of horses in the 1st and 2d Life Guards under the immediate supervision of Vet. Major Flintoff and Sergeant Farrier Peacock. I took off of their cavalry horses, 32-oz. shoes and put on 6½-oz. shoes, and proved by actual wear that our shoe gave all the required satisfaction in wear, the horses shod did more work with less effort, and they obviated slipping on the greasy streets.

Here are some of the shoes for your inspection, that were on for six weeks, the heavier ones when new weighed 12½ ozs., the lighter ones 6½ ozs. (Various shoes were exhibited.) Going to the College of Veterinary Surgeons, Prof. McQueen had no confidence in this shoe, as he stated they had a museum full of such specimens, and they all broke, especially some they got from Germany. I proved to him that he was wrong and won his confidence on the spot. He asked me if I would shoe one of their subjects, and demonstrate our American style of shoeing to a class of students; which request I accepted, and at 9 o'clock the next morning I "stripped for action," having a set of my own shoeing tools with me.

When I picked up that horse's front foot there was a shoe on it 1½ inches in width and ½ inch in thickness; and I could have sworn he was foundered on account of the amount of sole that had grown under that shoe. It was so large and clumsy I could not remove it with any tool I had, so he got their horseshoer to take it off. After the shoe was removed I took my knife and picked the sole at the point of the frog, and found at a glance that instead of founder the horse had grown a double sole, the cause of which, and everything connected with it, I had to explain to the students in my own crude practical language. Inflammation had set in during the time it took to grow this sole and had apparently disappeared under treatment; which was shown

when I took the complete sole off without breaking, and showed the most beautiful new sole and frog that I had ever seen, above it.

I then trimmed the horn down to the proper angle, and made such a satisfactory job when I was finished, that Prof. McQueen asked me to shoe Dean McFadcan's horse next day. I realized the honor given me, and when this beautiful horse was brought into the shop I almost cried when I saw his feet, and how he was shod. He had on a set of full interfering shoes, the inside half being turned on its edge, and the nail holes ending around the toe. The whole inside quarter was rasped away, leaving that part of the foot V-shaped. I asked Prof. McQueen why he was shod that way, and he said to keep him from interfering.

This horse in conformation was perfection itself, and I frankly told him the horse would not interfere if properly shod, leaving as much radius of horn on the inside as on the outside, measuring from the center of the frog. I stated that they had rasped away what nature grew, and then tried to offset it with an artificial horn, by turning that part of the shoe on its edge. He still disagreed with me, and I asked permission to shoe him my way, which he reluctantly gave me, if for no other reason than that he thought I would (as he put it) get a "black eye," should I fail.

I levelled that horse's foot by cutting a strip of my leather apron and doubling it to put under the inside of the shoe, lowering the outside as much as possible, and leaving the whole contour of the shoe perfect so that when it was adjusted the horse had as much bearing on the inside as on the outside. To do this the inside of the shoe lapped over the foot from the quarter to the toe so much that I could not drive a nail, and so as to keep the shoe on I had to put in an extra nail-hole at the inside heel. All of this had to be explained to the students; and I am pleased to say the horse never touched a hair as long as he wore those shoes.

I found that 7 out of 10 of all their fine horses were shod

with interfering shoes, and I frankly told them they were 50 years behind the times, in this art.

France has some beautiful horses, and great care and science is used on the shoeing of their feet. Charlier was at one time the great exponent of what afterward became commonly known as the "Charlier Shoe." This shoe was extremely narrow in the web, as he claimed the shoe should only be seated on the outer horn or shell of the foot, and the system of putting it on was to shoulder or sink the shoe down on the rim of the foot, not touching the sole, but having it flush with the thickness of the shoe when finished. This form of shoeing died a natural death, as you all are well aware that the seating of a shoe should be wide enough to support the connection of the sole with the outer horn, so as to assist in sealing this connection, during its growth.

France was as far behind us at the time I mention as England. Germany was the crudest of the three in the art of shoeing, and the manner in which they handle the foot to shoe it, even to-day, is a joke to us in this country.

The man who brings his horse to the shop to get shod has to hold his foot; if not, another is provided for that purpose; under such conditions the science of levelling the foot and properly adjusting the shoe is entirely out of the question. They advocate shoeing horses with a shoe made of a cast metal frame formed into a channel, with nail holes in the channel, and after this frame is nailed on they fill the channel with a tarred rope; all of which is a travesty on science and progress of the art.

Coming home to America, I say again without fear of contradiction, we are the peers of the world in this art, and I cannot conclude my subject without referring to the different position that our American veterinary profession holds in our Army as compared with their European brothers; and I respectfully suggest the following: Let the officers of our Army learn the art of war and put our veterinarians in full charge of our army horses, with a rank suitable to the position which they are fully entitled to. Gentlemen, I thank you.

HOG CHOLERA AND METHODS OF CONTROL.*

BY DR. E. A. CAHILL, MASS. DEPT. OF ANIMAL INDUSTRY.

When requested by your committee to read a paper on the subject of cholera I agreed readily enough, and without much thought of what was desired. Later thought, however, when about to prepare my paper caused me to realize that in the short time allotted to such a paper, we can do no more than start a consideration of this exhaustive subject, because every person present realizes that, instead of a short paper, an exceedingly large book would be required to consider comprehensively all phases of this disease.

I may say that this is not written as a strictly scientific discourse, but to bring to discussion a few of the logical and yet scientific facts which may help us arrive at a clearer understanding in our consideration of this disease as applied to its practical aspect. It naturally follows, therefore, that many important points will not be considered and that we can consider only briefly and inadequately the few thoughts which I present. I must, therefore, ask those of you who are familiar with the theoretical and practical aspects of the control of hog cholera to be lenient with your criticism of my brief survey of this subject.

Allowing our minds to revert to the time previous to the discovery of anti-hog cholera serum, we vividly recall the hopelessness which we felt upon discovering cholera prevalent in a locality. We also recall our thoroughly inadequate recommendation of intestinal antiseptics and isolation of affected animals. Is it strange then that the public concluded that they knew as much regarding the disease as we? Or is it strange that upon the discovery of a preventative they were slow about sharing our enthusiasm? Since that time, results from the treatment have been so uniformly good when properly applied that skeptics have prac-

* Presented to the Massachusetts Veterinary Association, at Boston, October, 1914.

tically disappeared, and all scientific—or better, all intelligent—men are united in believing that the serum treatment together with proper quarantine and enforcement of sanitary measures, affords us our one hope in our great fight. As a result, the demand for the treatment steadily increases, and it behooves all of us to be not found wanting in our preparedness as regards cholera, its treatment and its control.

For some time past, the double versus the single treatment has been the chief topic of discussion. Each has been valiantly defended by its supporters and bitterly assailed by its opponents until few, if any, of the shortcomings of either remain unexposed. As a result of all that has been said and written, we know that both treatments are of great value. The remainder of my paper is offered as logical conclusions deducted from our experimental research work and the results of practical inoculations in many herds, together with the opinions of the leading authorities on this disease.

I assume that we are all thoroughly familiar with the theories of immunity, particularly with Ehrlich's side-chain theory. All of the conclusions and efforts pertaining to the serum treatment of cholera have their foundations on the principles of immunity. It is absolutely necessary, therefore, that those principles be thoroughly understood. It is then an easy matter to decide our method of procedure and when to use the single and when the double treatment.

The single, or simple, treatment, as you know, consists of serum only. It is used where we desire a temporary immunity. As a rule this is impractical on healthy herds because it would require too frequent revaccination. It is of value, however, when used close to marketing time, for protection during show-time, and for pregnant animals when exposed, until the period of gestation has passed. This same single treatment may cause a permanent immunity if shortly after its injection the animal is put into an infected pen, and subsequently picks up sufficient virus. This is what is commonly spoken of as "pen infection." This, however, is in our opinion a very uncertain procedure.

The single treatment is also employed when an animal has a temperature too high for the practical application of the double treatment.

The double, or simultaneous, treatment consists of the injection of a small amount of virus to stimulate the cells of the body to the production of their own antibodies, and simultaneously injecting protective serum to safeguard the body during this cell stimulation. Regarding doses, we get our best results from the following scale:

Serum: 20 c.c. for every 50 lbs. of live weight.

Virus: Animals up to 30 lbs., $\frac{1}{8}$ c.c.; from 30 to 60 lbs., $\frac{1}{4}$ c.c.; from 60 to 90 lbs., $\frac{1}{2}$ c.c.; from 90 to 120 lbs., $\frac{3}{4}$ c.c.; above 120 lbs., 1 c.c.

Double treatment should not be used in animals in sick herds which show a temperature above 103.6, in healthy herds not on animals showing a temperature over 104. I wish here to particularly urge the use of the thermometer. We should never, under any consideration, administer the double treatment without first taking the temperature of every animal. Many animals will show a temperature which will make the double treatment prohibitive, although they show no clinical symptoms. Never use virus on cases showing symptoms of chronic infection.

To recapitulate. The single treatment has the following advantages:

1. It has a curative as well as a prophylactic value. The exact value, however, cannot be calculated. In some herds it will save a great many animals, while in others the percentage saved will be very low indeed. When used as a curative agent, give at least half as much more serum than you would give a healthy animal. Oftentimes it is of great value in these chronic cases to reinforce with a second treatment one week after the first.
2. It protects animals, such as pregnant animals, which would otherwise be exposed to danger.
3. It prevents the objection of using virus on non-infected farms.

The last, however, we feel should not be charged too seriously

against the simultaneous treatment. We are thoroughly convinced that if it be administered correctly and painstakingly there is no need of the operator infecting the premises in any way. When the double treatment is used scientifically the animals will only in very rare cases show a rise in temperature, or any clinical effects. Consequently, while they may be called "virus carriers," they do not eliminate infected material, except, as previously stated, in extremely rare cases.

We may summarize, therefore, the advantages of the double treatment as follows:

1. It confers a lasting immunity without a greater cost than the single treatment.
2. It confers a temporary immunity on pigs from sows so treated.
3. We are certain the animal has received the virus and in the proper proportion. This relieves the uncertainty which we feel after using serum and placing the animal in infected pens. Here we have no way of knowing whether the immunity is active or passive until deaths occur to discredit our treatment.
4. It allows us to permanently immunize herds before the disease causes the death of a large number of animals. This is without danger of infecting the premises as before pointed out, if properly administered.

It is on non-infected herds that we get our most satisfactory results. Before pursuing this subject to its completion, a perusal of our figures may be of interest. Of all animals, presumably infected, treated by the single method, 91-3 per cent. have died; of animals treated by the double method, 1 per cent. have died, and of those, 3-10 per cent. have died from septic conditions, leaving 7-10 per cent. that have died through cholera infection. These figures, as you see, are most gratifying, and speak most highly for the double treatment. One interesting factor is that we have never had an animal die from the simultaneous treatment in a healthy herd. We must, however, expect some deaths from anaphylaxis. We feel that all our deaths have occurred in infected herds only in animals which already had virus in the system

but which showed no symptoms. This condition, however, every operator must expect to occasionally find. Practically all of the herds which the state is called upon to treat are badly infected herds with many dead or dying, with many others too sick to treat, and with an infection which has probably existed several years. Consequently, we feel that under these conditions our figures are extremely low. That the percentage lost would be even better in healthy herds is a logical conclusion.

One objection offered to the double treatment is that it does not immunize for several days after being given. This we feel cannot be substantiated. Our experiments satisfy us that the protection from the double treatment begins just as soon as from the single. If this were not so the virus would very soon cause symptoms of cholera. We have repeatedly placed badly infected animals in pens with animals which have just received the double treatment, and we have yet to see unfavorable results.

It is apropos at this time to mention a few of the common causes of failure:

1. Improper diagnosis.
2. Too much virus.
3. Too small an amount of serum.
4. Chronic infection.
5. Animals which have taken virus into their systems a few days previous to treatment but which show no symptoms and have a normal temperature.
6. Animals which have picked up virus after being returned to the pen.
7. Septic infection.
8. Injecting too large an amount of serum at one site.

Regarding the *first* cause I feel that we cannot go into the matter in our limited time. The subject in itself would make an extremely interesting paper.

Second. We know there is a tendency to use too much virus. We are of the opinion that in say a 50-lb. animal $\frac{1}{4}$ c.c. will cause the desired effect just as effectually as $\frac{1}{2}$ c.c. by stimulating the cells to the production of the necessary antibodies, and at

the same time it diminishes the danger. In infected herds the amount of virus should be made even smaller than that noted above.

Third. Regarding the serum. We find 20 c.c. for every 50 lbs. live weight to be a proper amount in uninfected animals. In animals showing a temperature of from 103.5 to 104 in uninfected herds, diminish the amount of virus and increase the amount of serum one-half. In cases showing temperatures over 104 where serum is being used as a curative agent, give one-half more serum than to a healthy animal. Make one infallible rule—always use too much serum rather than too little. It can never harm, and it may save many cases.

Fourth. Never give virus to an animal showing symptoms of chronic infection. These animals have a lowered resistance, the power to produce antibodies seems to be greatly reduced, and they succumb very quickly after vaccination. We are doing experimental work at present along these lines and hope that soon we will be able to have a curative treatment for such cases. At the present time, a reinforcement as above stated is our best recommendation.

In *five* and *six*, those animals obtain more virus than the operator intended, and as a result have not sufficient serum to protect and contract the disease. Even the most experienced operator will lose a few animals from this cause in infected herds.

Seven. Septic conditions. These can be almost entirely overcome by the operator; first by refusing to vaccinate unless sanitary conditions of pens and yards are satisfactory at the time of treatment and for several days following; secondly, by the most painstaking sterilization of instruments used and antiseptics of the point of injection. If this is properly done, abscesses and septic infections will be few indeed. Liquor cresol compound, or lysol, in 2 per cent. solution should be used for scrubbing the skin, and the site of injection should always be painted with iodine. Needles, etc., should be kept between injections in your antiseptic solution. We should ever remember that the

better our antisepsis, the better our results will be, and that even the most stringent measures along this line are not sufficient.

Eight. In injecting the serum, do not inject too large a quantity at any one place; never more than 10 c.c. in one place, and in small animals 5 c.c. Make your injections subcutaneously and remember that you must get good absorption or endanger the animal. If too much be injected at one side, encapsulation frequently occurs with the result that the serum is not absorbed. The virus which is injected deeply into the muscles is absorbed and the animal contracts cholera.

One of the greatest considerations to-day is the protection and immunization of the young pig; and with your indulgence I will briefly discuss this matter. The cells of young pigs seem incapable of producing their own antibodies until they are from ten to twelve weeks old. Therefore, it is of no value for us to attempt to stimulate them to activity by the use of virus until that time. Pigs from immune sows are of course temporarily immune, this immunity lasting until weaning time or shortly after. If they are weaned at from ten to twelve weeks old, $\frac{1}{8}$ c.c. of virus and 20 c.c. of serum will be sufficient to give the desired active immunity. If they are not from immune sows or are weaned earlier, the best procedure is to use serum for a passive immunity until the age already given, at which time they should receive the double treatment. The double treatment given to animals under ten weeks old *will rarely give a permanent immunity* and therefore has no advantage over the single. On the other hand, it doubles the danger. Very frequently we, who advocate the treatment so ardently, are asked why if the treatment is so successful cholera is still on the increase. In concluding my paper I would like to point out a few of the reasons.

The first is because in my mind many men are using virus who do not understand the laws of immunity, who do not use good judgment, and consequently are incapable of using virus. The second is because many of us have not been sufficiently conservative. The enthusiasm for the serum treatment has caused some to use serum and virus promiscuously and depend upon it

entirely. Many men have beguiled themselves with the idea that serum would cure anything. They forget that it is a specific; they forget that the disease is a contagious one, that the most stringent quarantine possible should be enforced, and that grounds and buildings must be rid of the infection; they forget that they themselves may and do carry contamination on their shoes, clothes, etc., that their horses, autos, etc., may be carriers to other farms which they may visit; they forget the danger of a single drop of virus; they do not use the proper amount of virus; they do not have dead animals burned; they do not report cases promptly. All of these are reasons why cholera is on the increase; not *because* of the serum treatment, but *in spite of it*. As has been well said, "a little knowledge is a dangerous thing"; and it is even more dangerous in a professional man than in a layman. In place of the skepticism which formerly prevailed, we must apprehend even a greater danger in too great a certainty. Ignorance and carelessness will prove greater enemies to our advance against cholera than skepticism ever did.

A proper diagnosis, the careful and scientific use of both single and simultaneous treatment in their respective places by well-trained men, a strict quarantine and proper sanitation; these are our sure paths to our goal—the control of cholera.

SPRING STEP HORSESHOE WINS SILVER CUP TO REVERE RUBBER COMPANY: At the recent Horse Show in Madison Square Garden, Major Charles A. Benton awarded the silver cup presented by the *Rider and Driver* for the best complete commercial device, most suitable for public use, to obviate the slipping and lameness of horses, and at the same time to preserve street pavements, to the Revere Rubber Company for their Spring Step Horseshoe. This shoe has a rubber ground surface over its entire length; and is so constructed that the rubber is always in contact with the pavement, and actually outwears the metal part of the shoe if kept on long enough. The cup was strictly a reward of merit, and fitting encouragement for earnest efforts directed in the production of a non-slipping shoe; and we congratulate the Revere Rubber Company on its accomplishment in the production of this shoe, quite as much as on the winning of the cup.

SOME SUGGESTIONS ON RIDGLING CASTRATION.*

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But few surgical procedures in veterinary work offer to the practitioner the difficulties in mastering equal to those presented by the ridgling operation. This is true because, first, the operation is beset with real difficulties and real surgical risks; and second, because in a general country practice, as a rule, the number of cases presenting themselves for operation is so limited as to deny the surgeon the privilege of sufficient experience to become expert in the work. It has so happened that I have had an excellent opportunity of observing the difficulties experienced by beginners in the work, and of analyzing the causes of such difficulties, and it is my purpose in this paper to discuss briefly the chief troublesome conditions arising in the operation, and to suggest ways and means of overcoming them.

The veterinarian who has attempted the operation in a sufficient number of cases to realize the dangers and who has not yet reached the stage of surgical perfection to allow a feeling of security, will approach the operation with three things to be feared uppermost in his mind. These are, in order of supremacy, the difficulty of finding the testicle, and second, operative and post-operative protrusion of the bowels through the wound, and third, sepsis. All other surgical hazards arising in the operation are of minor importance and need not be considered here.

The difficulty in finding the testicle is the greatest source of trouble to the operator. The hidden testicle in ridglings is usually a flabby affair not unlike a bowel to sense of touch, and unless the operation is properly executed must be separated out and identified from the mass of small bowels with which it is more or less closely associated in operation. The touch sense perception

* Read at the 32d annual meeting of the Illinois State Veterinary Medical Association, Chicago, December, 1914.

of the operator must be keen, and he must have had experience in order to make such an identification; for with the hand or the finger in the abdomen crowded on all sides by the floating viscera of the cavity, the operator is under considerable handicap in his examination and search for the organ in question. Protrusion of bowels through his operative wound or the fear of making the mistake of pulling down a bowel instead of the testicle makes the task of locating the testicle all the more difficult.

At this point I wish to discourage the belief, which, if not now, was formerly a rather popular one, that it is a good method to pick up the *vas deferens* over the bladder and trace it out to the hidden testicle. This is never a process of value, and requiring, as it does, the introduction of the entire hand and part of forearm into the belly, it increases the risks of the operation by leaving a dangerously large opening. The *gubernaculum testes*, that intangible structure so often mentioned as a guide to the testicle, is valueless as a surgical landmark. Any one who can locate, identify and trace out these structures has a sufficient knowledge of anatomy and a sufficiently keen touch-perception to locate the testicle by a safer and better means.

The key to the easy finding of the testicle is expressed by the following single statement, namely: The entrance into the peritoneal cavity must be made through the internal inguinal ring area, or to be more exact, through the upper and posterior quadrant of that area. Let us see why this is true. First, an opening of this sort brings the operator into the belly at the very location of the testicle and its adenexa. The ridgling testicle is attached to the belly wall by a membrane, the mesorchium, the line of attachment of which extends upward and slightly forward from just above the internal ring. The testicle and its adenexa, almost without exception, lie just inside the internal ring, and the least anomalous of all the anomalous conditions in ridglings, is the attachment of the mesorchium. Consequently, entrance into the belly at the ring brings one into the very position of the testicle and its membrane of attachment, and often the testicle is pushed out through the opening as soon as it is

made. There is a little gush of peritoneal fluid and out slips same past the testicular structures. The second reason that an opening so placed makes for ease in finding the testicle is, that the opening is high up on the side of the belly at the pelvic inlet and away from the mass of small bowels. Operating through such an opening it is rare to have a small bowel come within the operative field. The fingers entering the belly will immediately come in contact with the testicle or its cord or may feel the rectum or the pelvic flexure of the great colon. The small bowels are anterior and lower down than this point and seldom interfere in the operation. If by chance a loop of the bowel instead of the testicle should be grasped the difference may be told by the fact that the bowel offers a steady, although possibly slight, resistance to being pulled out through the opening, while the testicle comes out freely unless complicated by adhesions in which case it comes not at all.

An opening made at any other point than that described above will complicate the operation by making it necessary to search for the testicle. Lower down or farther forward brings the operator into the belly at a point distant from the usual location of the testicle, and it is one constant anatomical factor, viz., the attachment of the mesorchium. Such openings require the introduction of the entire hand in the search and handicaps the operator by involving him in the troublesome mass of flotation bowels. Furthermore the surgeon has by such openings deprived himself of the valuable assistance offered by the tendency that even ridgling testicles have of descending out through the inguinal canal if they are but given a chance. I might mention at this point two things that may embarrass one in his manipulations. The first is the failure to break through the peritoneum, it stripping off ahead of the advancing fingers and making a large extra-peritoneal pocket in which the operator may become lost, failing to recognize the condition. The other condition is the breaking through into the base of the mesorchium. This puts the fingers into the loose mesorchium membrane where the testicular structures may be plainly felt, but cannot be grasped or drawn out into

the opening and which is very mystifying until properly interpreted.

Granting that difficulty number one is neutralized by making the entrance wound through the upper and posterior part of the internal inguinal ring area, let us consider for a moment how to locate this desired area. This is where most of the failures in the operation have their source. I have repeatedly noticed in demonstrating to the beginner in the art that it requires much less courage to dig a hole through into the peritoneal cavity at the lower end of the canal than is required to force the hand up the canal the proper distance to reach the internal ring. It is quite a distance from the scrotal cavity to the proper point of entrance into the belly and a great deal of force is required to push the hand up the canal. The first few times that one travels the road it seems to be a very difficult and very destructive journey, and one is very apt to hesitate before reaching the point of election, and make an opening through into the belly too low down and as well into trouble. A very good motto for the ridgling castrator to remember is, that the difficulties and the dangers of the operation vary inversely with the distance from the external inguinal ring to the entrance into the peritoneal cavity. Another thing of signal importance to remember is that though it seems very difficult and destructive to tissues to push the hand up the canal as described, it is much safer and better every way than to execute what seems to be the easier and simpler method of burrowing through into the abdomen lower down. In pushing the hand up the canal one is but separating the layers of the abdominal wall from each other and a knowledge of wounds tells one that such a wound is not dangerous.

In making an entrance up the canal it is essential to stay back against Poupart's ligament, peeling the fascia off from it with the fingers, and it is necessary to use extreme force in some cases; especially if the fascial filling of the canal is dense, if the patient is a muscular one or if the restraint does not spread the legs sufficiently. The fingers are pushed up the canal until the reflection of the fascia into the pelvis is felt, then they may be passed ex-

ternally along this line of reflection until the internal ring is felt or by other means the proper point for the opening is selected. To give an idea of the distance up the canal to go I will say that with the wrist lying on the prepubic tendon, the hand and fingers extended up the canal and the tips of the fingers on the line of reflection of the peritoneum into the pelvis, the finger points will be about at the point of election of opening; of course, making allowance for differences in size of hands and patients.

My advice to the uninitiated in the work, is to explore the inguinal canal of straight colts before operating a ridgling. When castrating these straight colts make the incision through scrotum only, leaving the testicle covered; pull the testicle and coverings down taut and slide the other hand up the outer side of the cord into the canal following the cord as a guide. By this means one can familiarize himself with all the points mentioned above. In doing this do not hesitate to force the hand beyond the point of entrance of the cord into the peritoneal cavity, for that is the area with which one must be familiar.

Considerable time has been given to the emphasizing of the above points because it is the one upon which the knack of the operation depends and the most difficult to master by those who have trouble with their ridgling work.

The second embarrassing condition that may arise in the operation, is the protrusion of bowels through the operative wound. This may occur during the operation, or it may be a post-operative trouble. I need not dwell upon the significance of the condition. It is an embarrassing complication, it prolongs the operation, it makes the finding of the testicle difficult, it exposes to sepsis and if of some magnitude may be an irreparable condition necessitating the immediate destruction of the patient.

The prophylactic steps to be taken to protect against this serious complication are these: First, the peritoneal opening must be small; second, this peritoneal opening must be at a point away from the mass of floating viscera (the small intestines and the colon); and third, the laparotomy must be made obliquely through the abdominal wall. The larger the opening the more directly it

is placed over the floating viscera and the more direct it is through the abdominal wall the more the danger of intestinal protrusion.

While it is possible to devise other satisfactory laparotomy openings, I do not believe that any could approach the inguinal canal route in efficiency. In using it we are following the suggestions of Nature. Nature built the inguinal canal for the purpose of allowing exit for the testicle, but in such a manner as to prevent the other floating viscera from being prolapsed. The peritoneal opening (internal ring) is small and placed where the small intestines and floating colon do not press upon it and the canal is oblique, valve-like in action, and is further protected by the overlapping thigh structures. Experience has taught us that the use of the inguinal canal route insures against intestinal protrusions. Furthermore it fits in with our scheme of easy finding of the testicle. We make our incision through the scrotum parallel with the median raphe and about one inch from it. The hand is forced through the external ring into and up the inguinal canal as described above.

Sepsis, the third danger of the ridgling operator's early experience, disappears entirely when he has become more proficient in the work. Sepsis is the progeny of a bunglesome prolonged operation, where there is much manipulation of the abdominal viscera and mauling of the tissues of the operative field. The conditions under which this work must be done are such that absolute asepsis cannot be obtained. However, ordinary attention to the cleanliness of the operative field, to the three instruments needed and to the hands used, coupled with a technique that insures rapid work will amply protect against this complication.

DR. DENNIS APPOINTED ON SHEEP SANITARY BOARD.—Dr. V. A. Dennis, of Springer, N. M., has been appointed veterinarian to the New Mexico Sheep Sanitary Board. One of the doctor's special duties, according to the *Santa Fe Eagle*, is to attend to the disinfection of cars in which sheep are shipped and keep close tabs on all cars so used. The doctor reports to the secretary of the board at Albuquerque.

VETERINARIANS SHOULD ADVOCATE HUMANE METHODS.

BY WALTER G. HOLLINGWORTH, D.V.S., UTICA, N. Y.

Tender-hearted, kind, compassionate, sympathetic, humane should be the slogan of every veterinarian. They all express active endeavor to find out and relieve suffering; and especially to prevent it. He should stand as an index or representative, a leader of a party which advocates such a procedure. The veterinarian depends on the dumb animals for a livelihood to a very great extent; the necessity of their care and protection to him is of vital importance; to him the community are looking for such action, as they, too, depend on the live-stock interests to a very large extent for their food and clothing; and on such interests depends much, the prosperity of this nation, as agriculture is the foundation of such, and without live stock agriculture would be at low ebb, it behooves us as guardians of health, to act in such a capacity; to build a suitable structure upon the foundations laid for us at the veterinary school, from which we secured our degree. If we do not comply with the teachings laid out it is not the fault of the college; the faculty did its duty, it is for us to make good. To-day the veterinarian is looked upon as a person of intellectual ability; a promoter of methods that will increase his standing in the estimation of the community. Where his jurisdiction covers, he to-day is an authority; his opinions are sought, his decisions bear weight, much different than in former days, when they were looked upon with disrespect; a man who had no feeling for dumb animals, a heartless wretch. There can be no work more elementally benevolent than that which seeks to help those who cannot help themselves, nor recompense you for the aid you gave them. When a human being looks at the suffering of the inferior animals and with a heart full of love seeks to alleviate those sufferings, he is patterning after a true conception of the boundless munificence and love

and philanthropy of the good and great Creator of all. Such a man or woman cannot be otherwise than kind to all; for if sympathy is deep enough to reach the lower animals, surely it will include the higher, or human, as the greater sentiment includes the lesser; and what an exalted place would our profession attain if such benevolence and sympathy could be made common among us. And who dare say such a condition of things is absolutely unrealizable, when we look at the rapid progress of the humanitarian views in the last few years. Deeply imbedded in man's nature, stultified, and covered up oftentimes by lack of forethought and good judgment, lie unexplored sources of good, which may yet be developed into incalculable blessing to man in the care and love of animals. All that is needed is to sow the seeds of humanitarianism on the deep and fruitful soil, and not on the surface, to get rid of cruelty, whether expressed toward a child or animal; which is an indulgence in the lower impulses that remain as reminders of barbaric times. The cruel veterinarian does more than inflict unnecessary pain on his patient; he injures himself; the impulse that leads him to cause uncalled-for suffering to the dumb beast, is the same that raises his hand brutally against his own offspring. The progressive, kind-hearted veterinarian of to-day is fast adopting anesthesia, both general and local, in his daily practice. Professor Wooldrige said in a broad sense, the term means a suspension of sensation; whether due to disease or injury the chief object of anesthesia is abolition of pain during operation and prevention of various reflexes and muscular relaxation. We are using anesthesia not only to operate but to make a more proficient diagnosis; our clients are asking and some demanding such, their investment demands the more efficient procedure. The idea of a client objecting to the small extra expense is fast fading away, and it is a poor excuse for the veterinarian to fall back on. We all ought to advocate the abolition of pain. As the great advantage of general and local anesthesia is becoming so plain to the owner and operator, the time is not far distant when it will be compulsory and I will be one of those (and am at the present time) who advocate that

no operation involving pain should be performed without the assistance of an anesthetic or analgesic.

A great many of us should study respiratory anesthesia more generally and become proficient in its use. I am of the opinion that many of us are too timid and fear an unpleasant result. That can be overcome by experience. I do not think a veterinarian should depend on an inexperienced assistant in giving an anesthetic. Do it himself. I always do my own anesthetic work and always use the best chloroform, as that is the anesthetic we generally use, especially in horses. It takes time, I admit, and some extra expense, but, gentlemen of this honored profession, the pleasure is yours. Patient quiet and insensible to pain, client well satisfied and a legitimate way of bringing your name before the public as a humanitarian, which is the public sentiment nowadays and constantly increasing. To me the veterinarian who practices surgery without alleviating pain to a minimum, is not doing his duty to himself, his family, to the community, his college, and patient; and to my way of thinking, he ought to be the subject of censure. There is no reason under the sun why we should torture our dumb animals because we can so secure them by means of restraint; they are very sensitive to pain; why should some persist to so act? How often we read articles in our veterinary journals written by men high in the ranks of our profession advocating operating under methods that do not relieve pain and torture! This is very painful to me and others who believe, like Shakespeare, that the humane way is the best. There is just as much humanity in caring for sick animals as those who are the subject for operation, to see to it that our patient receives the proper care and sanitary surroundings, and here is where the veterinarian ought to be an educator. Instruct the caretakers to so act as to give the poor dumb creature such care as is necessary for comfort, whether the result is convalescence or death. Veterinary hospitals are now becoming a necessity in the different communities; they are equipped for emergencies and are a great blessing.

The subject of prevention is of great value from the humani-

tarian's point of view; to prevent the transmissibility of disease from one animal to another and also to the human—a subject with which the veterinarian of to-day is in constant touch, and by his judgment saves untold suffering to live stock and communities, let alone the financial side of the problem. I might mention such diseases as tuberculosis, glanders, rabies, anthrax, foot-and-mouth disease and such diseases that can be conveyed by milk, whether from the farm or elsewhere.

I believe a great field for the veterinarian to show his kind-hearted tendencies is in his obstetric work; especially now when the milch cow is assuming such a prominent place in the public eye. Where in the case of the thoroughbred her value may run up to the tens of thousands of dollars, nothing is too good for her: you are instructed to go to the limit; but do as much for the other cow if she is not so aristocratic. She can suffer as much as the other under the same conditions; the only difference is the monetary value. May be to the owner one is as valuable as the other. If you do not get quite so large a fee, if you have relieved the sufferer in a humane way, you must have a very pleasant feeling within your breast, and the cow naturally has better chances of recovery; and that very word, gentlemen, is what your success is recorded on. Successes not failures count.

One of the greatest acts of humanity that can be performed on our dumb friends, is in their destruction at the proper time; in this the veterinarian must be the judge; here his opinion is asked very frequently, and here is where he must be a student of conditions. Would it be better to destroy at once rather than to have a patient bear the pain of repair, if an invaluable animal is to be the outcome? Here again the veterinarian should educate himself to be governed by his first impression, which if this motive has been his constant thought during his professional life, it will be the most lasting and to a very great extent the most correct. Now how is this to be done? The most humane way, whatever that may be, and that will differ under different conditions. Alleviate the suffering as soon as possible with the least pain and excitement. A well-directed bullet is far better than

an anesthetic, which is very disagreeable, to my way of thinking, judging from the excitement produced; but so frequently asked by a sympathetic owner. When we are required to go to an abattoir and witness the killing of animals, I frequently have to ask that methods practiced in the large packing houses be adopted—stunning and bleeding. I am much opposed to the way some butchers operate. Cruel to the extreme. We should use our efforts to try and bring about such reforms as to minimize the terror the dumb beast has for the killing, but not aggravate it.

I believe in the formation of humane societies; their moral effect has the greatest value upon the communities. And I believe the veterinarian should be closely connected with them; he is, or should be, an adviser. Sometimes a person or body of persons can become over sympathetic, and by constant agitation try to enforce their views, when if such acts were accomplished a great amount of suffering and death would be the result. Now very often conditions exist where it is necessary to cause slight pain and inconvenience under proper conditions to animals in order to bring about a scientific result the object of which would be to prevent a great calamity, not only in the human family but animals also. Such a procedure is no more or less than a humanitarian act.

How often, especially in cities where humane societies are active, the veterinarian is called to give an expert opinion in regard to alleged cruelty. Now here is where he should have the courage of his convictions, and give an honest view of the case; he must not be at both ends and in the middle, so to speak; be for or against, friends or foes are equal, if cruelty is the point of issue. The dumb animal must be suffering or not, according to existing conditions, and who is better qualified to solve the question than the veterinarian and how often opposing attorneys will try and complicate conditions to win their point. And in some cases they are effectual; much against the cruelty involved in the case, which is regrettable, but that is one of the uncertainties of the law. And what is more retrograding than for a professional man to receive an offering to swear according to the

views of the offender, which I know has been done on different occasions. To this all I can say is, I am sorry, but I hope for his sake and his family, he will think over this act seriously, knowing that he acted unlawfully, which is no right to any one, and it ought to be the desire of any person to be a law-abiding citizen. Remember, your honor ought to be first and foremost in all cases.

A NEW SERUM SYRINGE.—A month or two ago, we received from our esteemed friend and contributor, Dr. Willis Wilson, a set of drawings prepared by his patent attorneys, of a syringe invented by the doctor which, by its construction, greatly facilitates the injection of serum, especially hog cholera serum, as well as being useful in a number of ways; such as injection of normal salt and other solutions that require great dilutions. Among the great advantages of this syringe are one's ability to inject with it any amount of serum or liquid with a small syringe with but one insertion of the needle; keeping the serum sterile; and not having to remove the serum from the original bottle or container; simply replacing the empty bottle with another full one. The syringe, which is of 20 c.c. capacity, automatically refills as often as it is discharged into the tissue or vein. Dr. Wilson has fully demonstrated the practicability of the syringe; and being himself a veterinary practitioner, we may feel safe that if it was *not* practicable he would not have gone to the expense of having it patented; and he had applied for patent at the time of his communication. We shall hope to see the instrument demonstrated at the next large veterinary gathering, so that it may find its place among the veterinary appliances on the market. In the meantime, for those who are interested, and desire a more explicit description of it than we are able to give from the drawings, we refer them to the inventor, Dr. Willis Wilson, P. O. box No. 3, Dayton, Washington.

NO USE TRYING TO KEEP UP WITH THE TIMES WITHOUT THE REVIEW: Dr. C. E. Sweiel of New Hampshire writes: "No use trying to keep up with the times without the REVIEW; kindly send it for another year."

BACTERIAL VACCINES—THEIR USE AND ABUSE.

BY A. T. FERGUSON, D.V.S., EVANSVILLE, INDIANA.

At no time has this branch of healing been more abused, both by the profession and laymen. To-day vaccines of every description can be found and bought by any one who is willing to pay the price; and I have seen cases where it has been used with the utmost ignorance respecting effect on the animal, and some will tell you there is no harm in their administering them. I for one have seen cases where I believe they had done more injury than good.

One instance I may mention here of an animal that came under my observation that had been given a large dose, as was supposed and advertised by the vendor, to check influenza. Before this animal had been given this dose there was no sign of his being sick, and I felt he would not be attacked and had advised against giving him any. But it was administered in spite of all I could say, and a few days after, I was called in, and saw the worst case I had ever seen. So much so, that it took several weeks before the animal recovered.

His throat was not only swollen, but even the whole head and neck became involved, and at one time I despaired of saving his life. Temperature 104.2 degrees F.

I have for a long time discontinued using bacterial vaccines, made from what and where no one knows. I have noticed that in using these stock vaccines, that there is a vast difference in their effect on different animals. Some are more susceptible to them than others. In some cases there will be a dropping of the head, after an hour or so, and a loss of appetite; they refuse to eat sometimes for as long as 24 hours. In other cases the temperature will rise and the animal appears dull. I attribute these symptoms to the vaccines not being adapted to those cases, and usually I never get any good results from them; so I have discontinued their use.

When I find a suitable case and can procure sufficient pus I make an autogenous bacterin, and I have usually had some results from them.

But I am careful to observe that the animal is fit and able to stand a sufficiently large dose to do him some good from the start. I usually give 4 c.c. for the first dose, and increase it a little every time, until he has had 3 or 4 doses, which is usually sufficient. If there is no perceptible results it is about useless to continue. That has been my experience, and if all the veterinarians could make their own, there would not be quite so much rot on the market as there is. And the abuse by the horse dealers of its use might not have grown quite so extensively as it is at the present time. These men will send off and buy anything rather than pay a veterinarian for something better. And it's up to the veterinarian to give them something better than "the other fellow."

FORTY MILLION HORSES AND MULES OWNED IN WARRING NATIONS: The whole number of horses in Germany, according to the latest available statistics, at the beginning of the war was about 4,500,000, and in Austria and Hungary about 3,800,000. France had about 3,200,000 horses and 200,000 mules, the British Isles about 2,500,000 horses and Russia about 25,000,000 horses. Comparatively few of those in England, France or Germany are well adapted to cavalry work, and Russia could doubtless mount more troops acceptably than all the rest of Europe put together. When it comes to efficient horses for the artillery and the transportation service, however, the western nations possess far better horses than Russia has in any considerable numbers.

Whatever the exact situation may be when the war ends, the demand for horses will be prodigious. We know of no other farm product that can be produced with a greater profit. The only thing necessary to observe is that good horses will sell for enough more to pay well for rearing them.—(*The Horse Lover.*)

DR. F. C. DRIVER, Jasper, Indiana, has been appointed Deputy Veterinary Inspector for Du Bois County under the State Veterinary Department.

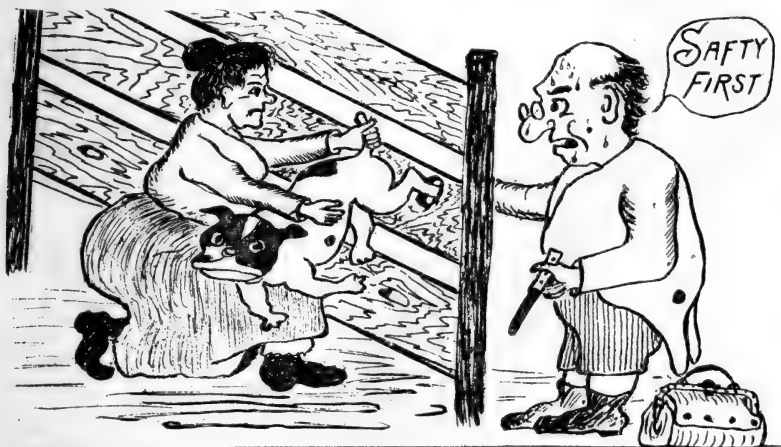
EXPEDIENT CONTROL OF FOOT OF SMALL ANIMALS FOR MINOR OPERATIONS.

BY S. R. HOWARD, D. O. V. (DULY ORDAINED VETERINARIAN), HILLSBORO, O.

You have all heard of the knot hole in father's wooden leg, well, this is the knot hole in the fence.

A small opening in board or wire fence, or lattice, I have found very advantageous when a supersensitive owner of a small nervous and snappy pet patient objects to anesthesia.

I may take the mouth, or not, but let the owner hold the animal and poke its foot through the hole.



I then pull it (the leg not the hole) well through, take a good strong hold and there you are. Safety first!

After operation is over, the owner's mind sometimes changes regarding the advisability of anesthetics.

I have tried to show my friends what a great holding company might do in exploiting this opening by first instituting a national subscription list for my whole enterprise.

These generous and devoted friends knowing my regal habits and frank delinquency, implore me to take out a patent on my discovery.

I cannot resist the temptation of grasping this epoch-making opportunity properly, so to speak, as it were.

The deep interest in my financial success shown by my dear friends indicates they appreciate the cost of my high living, and also, that they suspect I am about to declare a moratorium.

Sub rosa: As Mark Twain once said, "I am rising rapidly to poverty."

Now no one can fail to see that the assistance from the other side of the fence tends to promote equality, reciprocity and the highest efficiency which all helps business to make money.

Science acknowledges this.

You see I am fairly blasé over the certainty that my friends at last will mobilize for my benefit.

I have had a hard scramble to get along for twenty-seven years in a country practice, and now, at last confidence in my ability is established, I am about to come into my own.

(I am almost dizzy from the prospect of so much "financial stimulus.")

Ah! I can soon say with the old colored doctor, "Practizin' is very scandalivious."

Surely the Lord takes care of his own.

MINNESOTA STATE VETERINARY MEDICAL ASSOCIATION will hold its annual meeting at St. Paul, January 13, 14 and 15, and G. Ed. Leech proclaims it "The Big Meeting of the Year," announces that Dr. Reichel of Philadelphia will be with them, and finally concludes his communication with "Live ones cordially invited." Minnesota veterinarians must certainly be conceded "live ones" from the amount and nature of the work that characterizes their annual gatherings, so we presume we cannot blame G. Ed. for excluding all but live ones in his invitation to visiting veterinarians.

REPORTS OF CASES.

TWO CASES OF INTESTINAL OBSTRUCTION.

By A. T. FERGUSON, D.V.S., Evansville, Indiana.

No. 1. Some time in August I was called to see two black geldings 4 and 5 years old, and weighing about 1,200 lbs. each. These animals were suffering from an acute attack of influenza. The usual remedies were given each and both made a very nice recovery. When well, I advised the owner to get rid of them, telling him they were not suited for his work, which was hauling an ice cream wagon and making about 20 miles a day. I gave him my reasons, but the wise folk around his barn, knew better. They were put to work and in a few days I was called to see one of them at 3 a. m. suffering as they supposed, from colic. After treating this animal about an hour, I told the owner it would die; could not possibly live. I had diagnosed this as torsion of the large colon. I could plainly feel the colon doubled over on itself, and so pressed against the rectum, that it was almost impossible to make an examination. This animal was sick only four hours before the end came.

His mate was taken sick three weeks later, and I was called in the early morning to attend him. Before giving any treatment, I made an examination per rectum, and diagnosed this as a torsion, as I thought, near the stomach; although the large colon seemed to me to be in a very similar situation to that in the first case. I gave this animal every remedy I could think of to relieve him, without having the slightest effect on him. I was so surprised on making my examination per rectum, that I called in another veterinarian and explained to him how the other animal had been taken almost exactly the same way. However he could give no reason, nor much encouragement. This animal lasted about 36 hours. During that time he was tapped three times and remained standing almost the whole time, and seemed in little pain; but medicine seemed of no use whatever. When the end came I made an autopsy, and found the following conditions present:

Post-mortem Findings: Just beyond the stomach, in the duodenal trap, was a mass of undigested food, packed so hard, that

the water the animal drank 3 or 4 hours before death, was still in the stomach, which contained a large number of bots. Both colons were also packed and extremely hard and dry. The small intestines contained a very large number of long white worms. They were from 4 to 8 and 10 inches long. From all appearances the huge mass of accumulated ingesta, in the duodenal trap must have had some influence on the both colons; as the liquid could not pass out of the stomach.

In such cases, I have noticed the medicine is of little value and does not give the animal much relief.

But the peculiar point I wish to bring out here is, here are two horses, I believe from the same mare, and both put to the same kind of work, and both taken with about the same intestinal trouble.

It looks to me as if it had been handed down as a legacy from the parents. What say you?

CATARRH OF THE STOMACH IN AN AGED DOG.

By ROBERT W. ELLIS, D.V.S., New York, N. Y.

WITH

POST-MORTEM FINDINGS.

By CRITTENDEN ROSS, D.V.M., New York, N. Y.

On September 28, 1914, an aged English Bull Terrier was brought in for treatment with the history that he had positively refused to eat any food for five days, vomited at intervals and had scant bowel movement. He was given a cathartic and put on nux and pepsin. This treatment was continued for about five days, during which time he was presented at the office for observation three times. At the visit on the fifth day, he was reported as having regained his appetite, and when brought in three days later, because of constipation, his appetite was said to be excellent. His temperature at that time was 101, and he seemed to be in a very satisfactory condition of convalescence. A high enema was given which resulted in a good bowel movement, and our patient was not seen again nor heard from for about three weeks, when we received a call, with the explanation that he had taken a bad turn, and was too weak to bring to the office. I found the dog on my arrival down, lying in the hallway outside of the rooms, too weak to get up on his feet. He was vomiting

continuously, his mouth was cold, clammy and odorous, and the body surface was also cold. The ejected matter was streaked with blood and the general outlook hopeless. I explained the gravity of the condition to my client, who, while reconciled to the fact, still wanted to go down fighting and asked me to do everything possible while there was life in the old fellow's body. He also told me that during the interval since I had last seen him, the dog had apparently made a complete recovery; had gotten strong and pulled him along on the leash as he had always done; having been before his illness a very powerful dog. That fact of course encouraged the owner, and he was anxious to make another try at it. Accordingly the dog was conveyed to the office, the stomach tube passed and the stomach washed out with a very mild chinosol solution and the dog returned to his home. The vomiting of material heavily charged with blood continued however, despite every form of medication that we could suggest, until the end, which came about 10 hours after the attack came on.

Post-mortem Findings: The stomach walls had an hæmorrhagic appearance, the mucous membrane seeming to have been removed. Inflammation had existed throughout the entire intestinal tract, less marked in the small colon and rectum. The caecum was impacted, and was the only portion of the digestive tube containing any substance of a solid nature. The heart, especially the right side, and the blood vessels leading from it, were filled with the *filaria immitis*. The spleen showed a tumorous enlargement. The gall bladder was distended with bile, indicating that the bile had been held there and not used in digestion. The immediate death of the patient was probably due to the hæmorrhage from the stomach.

AN ILLUSTRATION OF THE VALUE OF RECTAL EXAMINATIONS IN MAKING A DIAGNOSIS.

By CHARLES THOMPSON FAKE, D.V.M., Granville, N. Y.

On November 1, 1914, I was called fifteen miles to see a five-year-old bay gelding. The owner advised me, over the phone, that although there was nothing in particular the trouble with the animal, he was in very poor condition notwithstanding his voracious appetite.

On the day I received the call I visited the farm where the animal in question was kept. During my examination of the

horse I learned from the owner that I was the third veterinarian whom he had called to see the case. My client stated that the other men had intimated bots as the cause of the trouble, and had left him some medicine which had seemed to cause a temporary improvement in the animal's condition; but that at present he was worse than at any time before.

An examination showed temperature, heart, and respiration normal. The visible mucous membranes were slightly ictherous, and an examination of the mouth disclosed the information that the animal's teeth had been recently floated. The coat was rough and had not been evenly shed.

The owner desired to have the animal well physicked. Accordingly I gave a physic ball, and left medicine for a week, asking him to advise me as to results.

I heard from him again at the end of the week, and he wanted me to make another call. This I did on the following day, and the only new symptom I noticed was an apparent difficulty in opening the jaws to chew hard substances.

I decided to make a rectal exploration, and was rewarded by finding a large tumor lying on the right side of the abdominal floor, and extending forward beyond the reach of my arm. The tumor was immovable by pressure, but palpation caused pain.

I advised destruction of the animal, and desired to make a post mortem, but the owner wished to keep him for a time, stating he would have him disposed of later.

I regret I cannot report post-mortem findings, but I trust this experience will speak in favor of rectal exploration in similar cases.

GANGRENE, OR MORTIFICATION.

By A. T. FERGUSON, D.V.S., Evansville, Indiana.

Last month I was called to attend a bay gelding about 9 years old, suffering from a caulked pastern joint. The animal was extremely lame and would not place that foot to the ground. I administered tincture of iodine, and bandaged it, but the more I did the worse the animal seemed to get. I concluded then I had something serious to deal with. I changed my remedy to a good warm application of antiphlogistine, and on removing this I noticed there were a number of red blebs, and the whole of the leg from the knee to the foot was affected with moist and soapy gangrenous tissue. It had spread rapidly to the joint and involved the deeper tissue, and tendons; so quickly had this taken place

that I notified the owner that the animal should be destroyed, but he, like many others, thought it could be cured. So I was paid off, and "the other fellow" called in; and after five days of useless effort, the foot fell off, and the animal was sent to the bone yard.

Now comes the question, what caused this gangrene? In my humble opinion it was a clear case of infection from another animal which had been afflicted 18 months before and allowed to lay around in the back yard. And this animal had been allowed to do the same without any previous caution taken.

The leg was treated continually with good strong disinfectants and kept well bandaged to protect it in every possible way. I have repeatedly refused to continue the treatment, when I was satisfied the results would not be profitable to the owner, and in some cases "the other fellow" has been called in to continue the treatment; but it has in every case, turned out just as I predicted, to the sorrow of the animal and much more to the owner.

AN INTERESTING POST MORTEM OF A CASE OF GASTRIC AND INTESTINAL TYMPANY.

By CRITTENDEN ROSS, D.V.M., New York, N. Y.

Reaching a case, in company with Dr. Robert W. Ellis, too late to see the animal alive, which from the history had evidently died suddenly from a severe attack of colic, a post mortem was decided upon, which revealed the following conditions: The stomach was greatly distended by gas and the fermented mass which it contained; its walls presented the tenseness of a drum, and appeared inflamed, especially near the cardiac opening. The small intestines were also greatly distended with gas, having a diameter of about four inches, and their walls very tense. About five feet of these small intestines showed congestion and inflammatory changes; which portion was partially separated into two divisions, by a portion practically normal in appearance.

The caecum and large intestine were unaffected, and only partly filled with their normal contents. The lungs were of a very dark color, due to the blood which they contained; and the blood throughout the vessels of the body was very dark.

Conclusions: The sudden death, the presence of gastric and intestinal tympany, and the color of the blood, indicate that death was brought about by asphyxia from intra-abdominal pressure.

QUITTOR.

By A. T. FERGUSON, D.V.S., Evansville, Indiana.

Here is a case of quittor, of long standing, treated for several months by a young veterinarian, seemingly without results. This was a gray gelding about 1,000 lbs. in fine condition, age about 10 or 11 years. On examining the foot, the right front, I found the animal suffering considerable pain; so much so, that he was very lame. I commenced my work by applying a stimulating lotion, which had the effect of a sweat-blister and seemed to draw it to the surface, or through the surface. This I did not consider sufficient, so I made a good-sized incision and opened it up good and deep; which caused a profuse hemorrhage, which I allowed for some time to flow freely. Then I bandaged it without any further treatment for 24 hours; after which I continued my stimulating treatment, both internally and externally. The outcome was a rapid recovery, and the total absence of lameness in three weeks. Evidently the former treatment was not sufficiently stimulating to the tissues, to the destruction of the infection, and at the same time helping the new tissue to develop itself. That's the trick in quittors.

SPECIAL COURSE FOR LICENSED VETERINARIANS: The School of Veterinary Medicine at the University of Pennsylvania, offers a special course for licensed veterinarians extending over one week, beginning January 25, 1915. Applications should be mailed so as to reach the dean, Dr. Louis A. Klein, at 39th street and Woodland avenue, by January 18. A tuition fee of \$5 will be charged for the course.

THE MISSOURI VALLEY VETERINARY ASSOCIATION will hold its annual meeting at the Coates House, in Kansas City, February 2, 3, 4, 1915. Secretary Simpson announces that the prospects are already bright for a good meeting.

THE REVIEW A HEART-WARMER: Dr. C. C. Stevens of Michigan, speaking of the REVIEW, says: "Its pages are always full of sunshine for me."

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

PURPURA IN THE DOG [*W. G. Blackwell*].—A three-year-old fox terrier was one evening noticed bleeding from the nose. The animal was of a normal, healthy condition, and presented over the abdomen small purple patches. The temperature was 104, pulse 55. The breath was fetid and the mucous membranes of the cheeks and gums were much ulcerated. The abdomen on the right side of the penis was a purple mass. To the left of the penis there were smaller patches. Purpura was diagnosed and a treatment ordered of liq. extract ergot and tincture ferri perchloridi. The ulcers of the mouth were touched with caustics. Bleeding at the nose occurred twice the following day and the discoloration of the skin was more marked and covering larger surfaces. On the 3d day of treatment the symptoms subsided and all had disappeared on the 7th. The sores of the mouth lasted longer.—(*Veter. Record.*)

VERY LARGE VENTRAL HERNIA IN A MARE [*G. S. Thomas, M.R.C.V.S.*].—Fifteen or sixteen-year-old bay carriage mare had a very large ventral hernia, which appeared at the time she was advanced in pregnancy. Notwithstanding her condition, she foaled down all right with a great deal of pain during the act of parturition. The foal lived but fifteen days, and the mare was destroyed after. At the post mortem, the abdominal muscles were found merging indistinguishably into the skin. The case was quite inoperable.—(*Veter. Journal.*)

CESARIAN SECTION IN A MARE [*M.R.C.V.S.*].—Hackney mare had tetanus and she was within a week of parturition. The foal was of valuable pedigree and ought to be saved at the risk of the dam. She was chloroformed, and when fully under the influence, an incision was made in the middle of the abdomen. The mare being afterwards put to death with more chloroform. The foal lived for a fortnight and died from an ailment, which

was entirely independent of the manner it was brought into the world.—(*Veter. Journal.*)

ENORMOUS LIVER IN A HORSE [*Capt. A. J. Williams, F.R.C.V.S., A.V.C.*].—The illustration of a liver found at the post mortem of a country-bred gelding, seven years old, which never had anything wrong before. He became sick and was treated for anaemia and debility, for 263 days out of the two last years, when he was ultimately destroyed. The autopsy revealed a condition simulating generalized tuberculosis of the lungs, liver, kidneys, intestines, bladder and pancreas. The liver weighed *ninety pounds* and was cirrhotic and calcareous throughout.—(*Ibidem.*)

OMENTAL HERNIA OF THE LEFT FLANK IN A DOG [*J. F. D. Tutt, M.R.C.V.S.*].—This condition is rare in dogs. It occurred in an Aberdeen terrier, which had a swelling situated high up in the left flank for some time. The swelling was fairly hard and no opening into the abdomen could be detected, to make a positive diagnosis. The dog was anaesthetised, after disinfection, an incision was made over the swelling. There escaped a certain quantity of urine-colored fluid, and on dissecting the edges of the wound, it was seen that the swelling was due to the omentum being adherent to the flank wall, through a small opening. Adhesions were broken down, the omentum reduced, the opening sutured and the wound closed in the usual way. Recovery followed.—(*Ibidem.*)

POLYCYSTIC KIDNEY IN A BUFFALO [*H. C. Ganguly, Bengal Veterinary College*].—Though not uncommon in human beings, cystic degeneration of the kidneys is rather rare in lower animals.

This was found in making the autopsy of a buffalo that died with rinderpest. All the lesions of cattle plague were found and besides them, a largely hypertrophied left kidney. It was nodular in shape and on section exhibited multiple cysts of varying sizes, situated between the cortex and its pyramids. The sacs were filled with thin yellowish fluid and well isolated from one another by septum of greyish white interstitial tissue, compressed renal parenchyma in some of them.

The animal was old, had no cystic or dropsical affection of any other organ and his renal ailment remained unsuspected during his whole life.—(*Veter. Record.*)

FRENCH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

NAIL IN THE FOOT AND LAMINITIS [*Mr. Beauvillain*].—Complications following punctured wounds of the foot are not rare. They often give rise to toxi-infections, and laminitis is one amongst them as shown by the following case.

A mare, nine years old, is lame on three legs by a punctured wound, made by a nail, which has entered near the toe of the right fore foot, at even distance from the wall to the point of the frog. After disinfection, an antiseptic dressing is applied. Four days after, the leg is swollen and the horse is very lame. The wound made by the nail, has a bad appearance, the discharge is greyish and sanious. Probing reaches a piece of necrosis of the third phalanx. The opening of the fistula is enlarged, the bone curetted and after application of tincture of iodine, an antiseptic dressing is put on. Notwithstanding this interference, the case grew worse. The leg is much swollen, way up to the elbow and fluctuation being detected at the carpal sheath, a puncture was made, which gave escape to a small quantity of bloody pus. After a few days slight improvement takes place as far as the swelling of the leg goes. But the general condition is bad. The animal is threatened with toxi-infection. He moves with difficulty and the right fore foot is very warm. The mare is put in slings and irrigations prescribed for both legs. After a few days, the mare is taken out of the slings and walked. Her gait is characteristic. The right fore leg rests on the ground, with hesitation, the heels being put down first, the hind legs being carried well under the body. It is the gait of laminitis. The sole of the right fore foot has dropped down and is bulging from the toe to the point of the frog. Subsequent treatment of this foot and proper shoeing permitted the mare to resume some amount of work.—(*Journ. de Zootchn.*)

PANCREATIC EPITHELIAL AND INTESTINAL CONJUNCTIVE CANCER IN A DOG [*Prof. Dr. V. Ball*].—It is not common to observe in one animal, the coexistence of a malignant tumor with that of a benign neoplasm; but it is altogether exceptional, to meet in the same subject two cancers of histologically different natures. Such was the case in the black poodle of nine years old, recorded here.

He was in cachetic condition. The loss of flesh began to be noticed some three months previous. It came on rapidly but

progressively, and yet the appetite was fair and even at times exaggerated. Since three months the feces have been diarrheic, clay-like, "looking as dirty milk," says the owner. Considering the condition of cachexia of the dog and the character of the feces, cancer of the pancreas was diagnosed; although the presence of glycosuria was found absent by chemical analysis of the urine.

The animal was destroyed. The diagnosis being confirmed by the detection of small neoplastic grey-whitish nodules, varying in size from that of a pea to that of a hazel-nut. They were found in the body, the head and the tail of the pancreas. But besides this, there was found, close to the pylorus, a round and slightly flattened mass, which on incision of the intestine, proved to be a cupuliform tumor, made of grey rosy translucent tissue. In the omentum, there were hypertrophied and diseased lymph glands. In the lungs, spleen and kidneys were also metastatic lesions of the same nature.

The dog had also chronic mitral and tricuspid endocarditis. The pancreatic tumor was a metatypic glandular epithelioma. The intestinal sarcoma with large round cells.—(*Ibidem.*)

ARTERIAL DIGITAL LIGATURE IN PHALANGEAL OSTEITIS [*Profs. Lasserre and Lesbouyries*].—The three following observations may be considered as contributions to the history and applications of the operation recommended since 1912 by Prof. Joly of Saumur.

1. *Congestion of the Left Anterior Foot.* A half Anglo-Norman horse, when five years old, had the left fore foot bruised in some way by the wheel of a wagon. He showed only slight limping, which subsided after few tepid water baths. Some weeks after, he became lame again on the same foot. Treated in the same way, he again got over his trouble and resumed work. But a third time he is disabled. Then he is very lame. Percussion on the foot, pinching with nippers do not reveal any soreness or pain. The foot is normal, with the cartilages soft and elastic; but it is very warm, much more so than the other.

Ligature of the digital artery seems indicated. It is performed. The heat of the foot did not diminish until the fourth day. The lameness gradually subsided and the horse was soon considered as cured. Some short time after, before being returned to his ordinary work, he is exercised and soon the lameness returned, increased and required plantar neurectomy first, and afterwards median to relieve him entirely.

2. *Phalangeal Osteitis of the Right Fore*.—This horse has cartilaginous calcification of the right fore foot. He became lame on both fore legs. The lameness is increased when the animal is moved on the pavement. Both cartilages are ossified. No improvement is obtained by simple local treatment and digital ligature is performed. After one month, recovery seems complete. The horse resumes work and performs it for several months when the lameness returned as severe as before. The horse was sold.

3. *Phalangeal Osteitis of the Right Fore*.—Anglo-Norman mare after some days of moderate work becomes slightly lame on the right fore leg, principally on the pavement. Close examination reveals nothing abnormal. After a few days however, the trouble is more marked, there is more lameness, heat round the coronet and also at the heels, which are somewhat tender. Injection of cocaine confirms the suspicion of the lameness being located in the foot. Arterial ligature is finally performed. After cicatrization of the wounds of operation, the lameness is still present, less marked however; it gradually subsides so that the mare resumed work. Later however, the same lameness returned as was the case in the first observation.—(*Revue Veter.*)

A CASE OF ENCEPHALO-MYELITIS IN A HORSE [*C. Lesbre*].—After one day's work, a horse is taken suddenly ill. Covered with perspiration, he scrapes the ground, with his feet, has febrile chills and muscular twitchings. The temperature rises to 39.3 degrees, the head is hot, eyes half closed, right pupil contracted, while the left is dilated. The penis is cold, flabby and hanging down, the anus is open. Though there is not truly paraplegia, there is a certain incoordination in the hind legs. Successively used, diffusible stimulants, purgatives, ice bags on the head, injections of caffeined serum, bring no change in the first two days of the treatment. Then the temperature goes down, the appetite improves, locomotion is easier, defecation and micturation become normal. The general symptoms continue to improve. Gradually the temperature returned to normal, the anal and rectal paralysis disappeared, and the penis is drawn back in the sheath. As the head is still very warm, ice is kept up. Some twenty days after the onset of the disease, the local and general symptoms have entirely disappeared and there remains but a loss of energy and the nutrition was delicate. The author thinks that it was a case of intoxication by the hay used as ration to the animal.—(*Soc. Scient. Veter. de Lyon and Revue Generale.*)

CORRESPONDENCE.

FOOT AND MOUTH DISEASE.

Urbana, Ohio, December 5, 1914.

Editors AMERICAN VETERINARY REVIEW, New York:

GENTLEMEN—Please find picture of a herd of cattle and hogs, that was found infected with foot and mouth disease.



This herd was found by Drs. Albert Buck and D. F. Bowen in northern part of Champaign Co., Ohio, on the farm of W. W. Wilson. The dimensions of the pit are: 54 feet long, 8 feet wide and 8 feet deep. And there were 49 steers, 4 milch cows and 90 head of hogs buried in it by the Federal and State authorities. The date of the finding was November 13, 1914.

Yours respectfully,

BUCK & BOWEN:
ALBERT BUCK.

BIBLIOGRAPHY.

ANIMAL CASTRATION.

ANIMAL CASTRATION—A BOOK FOR THE USE OF STUDENTS AND PRACTITIONERS, by George R. White, M.D., D.V.S., graduate Columbian University (Veterinary Department), member American Veterinary Medical Association, Tennessee Veterinary Medical Association, American Medical Association, Tennessee Medical Association, Nashville Academy of Medicine, Davidson County Medical Society, Tennessee Academy of Science, United States Live Stock Sanitary Association, etc.; professor of Veterinary Medicine, Knapp School of Country Life, Teacher of Surgical Restraint, Castration and Spaying, Chicago Veterinary College, Terre Haute Veterinary College, Indiana Veterinary College, and Alabama Polytechnic Institute (Veterinary Department). Author of *Restraint of Domestic Animals*, etc., 240 pages, with over 200 half-tone illustrations from original photographs. Nashville, Tennessee. Published by the author, 1914.

During Christmas week, amongst the many interesting packages that found their way to our desk, was one containing the excellent work on *Animal Castration* by Dr. George R. White. From a man of Dr. White's experience and untiring energy as an operator for more than a score of years, one might anticipate a work of considerable volume and completeness on this practical subject, in the practice of which he has devoted a full share of his time; yet few there are, who will be prepared for the extensive work that he has compiled. With his usual straightforward manner of expression, so easy to the person who is master of his subject, the author explains in a lucid yet brief manner, each step in the operation of castration in each class of animal separately; his excellent illustrations demonstrating clearly, the methods of restraint, instruments to be used, the organs to be removed, normal conditions and complications. And while making very clear the dangers to operator and animal through insecurity of restraint, he admonishes the operator to confine the animal in as humane a manner as possible, never to take advantage of an animal when confined, or inflict any unnecessary pain, and to use general anaesthesia wherever possible.

Part I. of this work contains eleven chapters as follows: *Castration of the Stallion; Castration of the Colt; Castration of the Mule; Complications Encountered in Castrating—viz.: Inguinal Hernia, Scrotal Hernia, Cryptorchid, Monorchid, Orchitis and Hermaphrodite; Sequelae of Castration—viz.: Septic Infec-*

tion, Tetanus, Prolapse of the Intestine, Azoturia, Hemorrhage, Oedema of Sheath, Schirrous Cord, Exuberant Granulations, and Hydrocele; Castration of the Bull; Castration of the Boar; Castration of the Ram; Castration of the Dog; Castration of the Cat; Caponizing. Part II. contains eight chapters: *Mare Spaying; Cow, Heifer and Calf Spaying; Sow Spaying; Sheep Spaying; Bitch Spaying; Cat Spaying; Poulardizing; Deodorizing the Skunk.* The technique of each of the foregoing operations is individually explained and clearly demonstrated by cuts made from the author's own subjects, together with all the instruments and controlling apparatus. Nothing is left to the imagination. It is of course impossible to do justice to a work that is the accumulation of knowledge of twenty years in the field of veterinary practice, in a short review of this kind—we cannot do more than suggest some of its qualifications, as it would require long and critical study of the book to appreciate its full value. But even in our superficial perusal of it we have been impressed with its completeness; not alone in the treatment of the subjects under discussion, but with the superior quality of the paper, the large, clear-cut type, and the distinctness of the illustrations. In short, *White's Animal Castration* is an essential to every practitioner and to every student of veterinary surgery; and is destined to become the adopted text-book on the subject, in all American veterinary colleges. The book is handsomely bound in light blue, with gold lettering on the front cover as well as the usual lettering on the back; making a very pretty volume for an office table.

BOTANY.

OUTLINES OF LECTURES ON BOTANY PREPARATORY TO VETERINARY MEDICAL STUDIES: Especially as an Introduction to Veterinary Materia Medica, Pathology, Toxicology and the Feeds and Feeding of Animals, by D. Arthur Hughes, Litt. M., Ph.D., D.V.M., professor of Dairy Inspection, Milk Hygiene and Medical Botany in the Chicago Veterinary College, Chicago: Published by the Author, 1914.

This little work by Professor Hughes is dedicated to beginners in veterinary medical studies in the hope that its pages may help to secure information on the relation of the composition of plants and the products of plants, to animal growth, the diseases of animals, and their medical treatment. It is divided into eighteen lectures and a review. Lecture I—*The Plant Cell, Composition, Contents*; Lecture II—*Protoplasm and Its Environment*; Lecture III—*Growth of Plants*; Lecture IV—*Plant Absorption*

—*Liquids*; Lecture V—*Root Absorption*; Lecture VI—*Transfer of Water in Plants*; Lecture VII—*Transpiration*; Lecture VIII—*Plants and Soils*; Lecture IX—*Ash Constituents of Plants*; Lecture X—*Assimilation*; Lecture XI—*Nitrogen Appropriation by Plants*; Lecture XII—*Nitrogen-Free Plant Products*; Lecture XIII—*Nitrogenous Plant Products*; Lecture XIV—*Plants and Veterinary Materia Medica*; Lecture XV—*Plants and Animal Nutrition*; Lecture XVI—*Plants and Veterinary Toxicology*; Lecture XVII—*Economic Lecture on Cotton*; Lecture XVIII—*Remarks on Botanical Studies*. Botany has never been an attractive subject to the average veterinary student, but the preparatory study as arranged by Prof. Hughes has the effect of directly connecting in the student's mind, botany with veterinary medicine-food products, and the relation of plants to drugs, and arousing in him a curiosity and an interest to further explore, what he finds after all to be an attractive field. It does that because it has cleared up in those eighteen lectures many hazy points in the student's mind, and prepared him for a thorough and comprehensive study of the deeper ramifications of the subject as he advances from year to year in his other studies. That is the object of the book, and if our impression of it is the correct one, it has accomplished that for which its author compiled it. That our impressions *are* correct, we believe to be certain, because the perusal of the work aroused in us a hitherto dormant interest in that important line of study. It should be adopted by every veterinary college and placed in the hand of every freshman.

A TEXT-BOOK OF GENERAL BACTERIOLOGY.

(Fourth Edition Thoroughly Revised.)

A TEXT-BOOK OF GENERAL BACTERIOLOGY. By Edwin O. Jordan, Ph.D., Professor of Bacteriology, in the University of Chicago and in Rush Medical College. Fourth edition thoroughly revised. Octavo of 647 pages, fully illustrated. Philadelphia and London: W. B. Saunders Company, 1914. Cloth, \$3 net.

This work, the compilation of a teacher of the subject, naturally is complete in all the essentials of the subject, while purged of all the unnecessary details. Nevertheless it requires 36 chapters to cover the subject from the author's viewpoint. A new chapter has been added to this fourth edition on the filterable viruses, bringing it right up to the present in the studies of bacteriology. Students will find Prof. Jordan's works interesting

and easy of comprehension, and old practitioners—who finished their college work before bacteriology occupied a place in the course of studies, will find reading it a profitable pastime. In short, *Jordan's Text-Book of General Bacteriology* fully covers the fundamental principles and methods of laboratory work and is therefore an essential alike to the earnest student and progressive practitioner. Bound in cloth of dark green with gold lettering, and printed in sharp type on an excellent smooth paper, its illustrations standing out clear and distinct, it is a credit to the publishers.

PROCEEDINGS OF THE AMERICAN ASSOCIATION OF PHARMACEUTICAL CHEMISTS—SEVENTH ANNUAL MEETING.

PROCEEDINGS OF THE AMERICAN ASSOCIATION OF PHARMACEUTICAL CHEMISTS
—SEVENTH ANNUAL MEETING. Held at the Hotel Somerset, Boston,
Massachusetts, May 25 to 30, 1914:

The published proceedings of the seventh annual meeting of the American Association of Pharmaceutical Chemists is tangible evidence of the progressiveness of the firms that comprise its membership. We find the names of eighty-five firms, representing fourteen states. The proceedings of this seventh annual meeting make a very creditable volume of more than 300 pages, devoted to papers and talks, the object of which is the binding together of the manufacturing pharmacutists on the principles of standardization and purity; all of which makes for better therapeutic results, and is therefore of vital importance and interest to the practitioner.

TWIN CITY VETERINARY MEDICAL ASSOCIATION: This association began activities this winter by a meeting at the Merchants Hotel, St. Paul, November 24, 1914. The excellent program sent out by the secretary, Prof. M. H. Reynolds, was surmounted by some excellent cartoons, one of which was representative of our esteemed friend, G. Ed. Leech, standing on a bridge, spanning the Mississippi, demanding to be shown "the papers" from a cow that is approaching the bridge from the Wisconsin side. Another is that of Dr. Weaver, to whom a porker is pleading for "some serum." The artist's work must have caught the vein of the members, as the meeting was a great success.

OBITUARY.

FRED SAUNDERS, D.V.S.

Dr. Fred Saunders died at Salem, Massachusetts, on December 19, 1914. He was graduated from the American Veterinary College with the class of 1882, and for a year thereafter officiated as house surgeon to the American Veterinary Hospital, under Professor Liautard. After that for the first few years of his professional life, he practised in the cities of Lynn and Salem, Massachusetts; finally succeeding to the practice of his father, Dr. Robert W. Saunders, an old-time veterinarian, and one of those referred to by Dr. Liautard in his address to the Fiftieth Anniversary Meeting of the American Veterinary Medical Association in New York City in September, 1913, as being present at the Astor House on June 9, 1863; and therefore a charter member of the U. S. V. M. A. Dr. Fred Saunders for the last few years of his life had been connected with the meat inspection service of the United States Bureau of Animal Industry, stationed at Somerville, Mass.; and quite recently, had been engaged in the work on the eradication of the present epidemic of foot and mouth disease. His death was due to acute Bright's disease, and his illness was of very short duration. He was at work as late as December 12, and died on the morning of the 19th. Those who were in attendance at the old A. V. C. during the time of his connection there, have very pleasant remembrances of his constant good nature, congeniality and professional courtesy. He leaves a widow, and one son of adult age.

EDWARD WOODYEAR MUMMA, V.M.D.

Dr. Edward Woodyear Mumma died at Henderson, Kentucky, on December 5, 1914, following an attack of typhoid fever. At the time of his death, Dr. Mumma was temporarily located at Henderson, Ky., co-operating with the federal veterinarians in the eradication of foot and mouth disease. He was

Associate in Animal Pathology, at the Kentucky Agricultural Experiment Station, at Lexington.

Dr. Mumma was born at Bendersville, Pa., November 10, 1890. His father, Dr. Richard T. Mumma, was a practicing veterinarian in York County, Pennsylvania, for over a quarter of a century.

Dr. Mumma graduated from the Veterinary Department of the University of Pennsylvania, class of 1912. For a short time following graduation he held a position as bacteriologist in the Veterinary Department of the H. K. Mulford Company Laboratories, at Glenolden, Pa. From there he went to Kentucky.

Dr. Mumma was a member of the American Veterinary Medical Association and the Alpha Psi Fraternity.—H. P. H.

Dr. F. W. O'Brien, 50 years old, a veterinary surgeon, and three times mayor of Hannibal, Mo., was killed while cranking his motor car. The crank struck him on the head.—(Wichita, Kans., *Eagle*.)

DR. JAMES T. McANULTY DEAD.—Dr. James T. McAnulty, ex-member of the Live Stock Sanitary Board of Pennsylvania, a practising veterinarian and a blacksmith, died Sunday afternoon at his home, 1447 South Eighth street, from pneumonia. He was stricken with a severe cold last Sunday. Doctor McAnulty was 62 years old. He had an office in this city and Cape May, N. J.

Doctor McAnulty was graduated from the University of Pennsylvania in 1888. He assisted in eradicating the epidemic among cattle in Pennsylvania 20 years ago. Forty years ago he established a blacksmith shop near his home and conducted it until his death.

He was a member of the Philadelphia Council, Knights of Columbus, the Keystone Veterinary Medical Association, the Pennsylvania State Veterinary Medical Association and master of the Horseshoers' Protective Association of America. He is survived by his widow, a daughter, Miss Margaret K., and two sons, James T., Jr., and Dr. Charles J. McAnulty.—(Philadelphia *Ledger*.)

SOCIETY MEETINGS.

MASSACHUSETTS VETERINARY ASSOCIATION.

The regular meeting of the Massachusetts Veterinary Association was held at the New American House, Boston, on Wednesday evening, October 28, at 5 p. m., 1914. Forty-two members and guests were present. Previous to which and through the courtesy of Dr. French, superintendent, and Mr. Mayo, farm superintendent, the members of the association and their guests were invited to visit the farm of the Medfield State Hospital, at Medfield, Mass., where a practical demonstration of the simultaneous method of treating hog cholera was given by Dr. E. A. Cahill of the Massachusetts department of animal industry, assisted by Dr. Warren L. Thayer of Worcester, Mass., after which Supt. Mayo escorted the company through the spacious dairy and stables, and at 4.30 the party commenced the return trip direct to the New American House, where President Seale called the members together at 6.10 p. m. for the regular monthly meeting. After the Secretary had read the records of the previous meetings and the same were approved, the president introduced Dr. Cahill, who read a paper on the subject of hog cholera and method of control, at the conclusion of which the Doctor invited discussion, which was freely participated in by the majority present. At this juncture Dr. Burr made a motion which was seconded by Dr. Peirce and unanimously carried that a standing vote of thanks be extended to Dr. Cahill for the demonstration and his valuable contribution, a transcript of which will be published in the AMERICAN VETERINARY REVIEW for the benefit of members who were absent. A standing vote of thanks was also extended to Dr. French and Mr. Mayo through whose courtesy the farm of the Medfield State Hospital was placed at the option of this Association. Dr. Peirce then reported the serious illness of Dr. Howard and on motion by Dr. Abele, seconded by Dr. Peirce, it was made a unanimous vote that the President appoint a committee to formulate and send to Dr. Howard a letter of sympathy. The appointees were Drs. Peirce, Babbitt and Pugh. There being no further business, the meeting adjourned, at 8 p. m.

W. T. PUGH, Secretary.

NEWS AND ITEMS.

THE VETERINARY ALUMNI QUARTERLY OF OHIO STATE UNIVERSITY was received just as we were closing our forms, and looks like a good number.

DR. GORE DEAD.—Dr. George H. Gore, Massillon, Ohio, died about the middle of October last, after practising in that place for over 40 years.

OHIO STATE VETERINARY MEDICAL ASSOCIATION.—The annual meeting of this excellent State organization will be held at the State University, Columbus, January 6 and 7, 1915.

WOMAN DIES OF ANTHRAX—ILL TWO DAYS.—Miss Isabella Agnes McFadden, 33 years old, died in Philadelphia in November last of anthrax. The first woman victim in the history of the coroner's office.

DR. BURKLAND GOES SOUTH: Dr. H. W. Burkland, formerly of Jefferson, Ohio, has accepted the position of Assistant State Veterinarian of Georgia, and has been in Atlanta since October 15, 1914.

DR. LANDES DEAD.—Dr. Edgar H. Landes, fifty years old, a practising veterinarian and former coroner of Camden, N. J., died recently of tuberculosis. Dr. Landes was a graduate of the University of Pennsylvania.

THE CHAIR OF SURGERY OF THE CINCINNATI VETERINARY COLLEGE is being filled during the present session by Dr. James A. Waugh, of Pittsburgh, Pa.; the doctor's practice in Pittsburgh, meanwhile being covered by an assistant.

DR. CAHILL MARRIED: Dr. Edward P. Teague, Lowell, Mass., announces the marriage of his sister, Margaret Annabel, on December 26, 1914, to Dr. Edward A. Cahill. The REVIEW congratulates the young couple and wishes them great happiness.

DR. J. ELMER RYDER CONVALESCING: The many friends of Dr. Ryder of New York City, will be pleased to know that he is getting better of the tedious illness he has been suffering from for some months. His family report him asking for his REVIEWS, which he has not read for a few months.

DR. HOWARD CONVALESCENT: Those of the friends of Dr. L. H. Howard, of Boston, Mass., who have heard of his recent serious illness, will be glad to learn of his safe convalescence. The REVIEW in expressing a wish for the speedy return of his strength, voices the sentiment of the whole profession.

DR. HOAGLAND MARRIED.—We read in the Chillicothe, Mo., *Tribune* of the marriage on November 25, 1914, of Dr. A. L. Hoagland, of Ottumwa, Iowa, to Miss Grace Druen, until recently a resident of Chillicothe, but at the time of her marriage residing with her parents in Ottumwa. We wish them joy and happiness.

CANADIAN VETERINARIAN WITH MILITARY RANK: Col. W. J. Neill is Director General of Veterinary Services in the Canadian Militia. He went with the first Canadian expeditionary force and is Assistant Director of Veterinary Services on the staff of General Alderson where the Canadians are camped on Salisbury Plains in England.

VETERINARY SCIENCE AND PROGRESSING AGRICULTURE is the title of an article in *The Southern Farmer*, from the pen of Dr. W. H. Dalrymple; the article having been written in anticipation of the A. V. M. A. going to New Orleans in December, but published after the vote decided the postponement, as shown by an *Editor's Note*. A frontispiece of the officers accompanies it.

CALLS FROM PROMINENT VETERINARIANS: During Christmas week we were honored by calls—on separate occasions—from Dr. John F. Winchester, veteran veterinary practitioner, of Lawrence, Mass., and Dr. Chas. H. Higgins, Pathologist, Health of Animals Branch of the Canadian Department of Agriculture, Ottawa.

Forty-seven carloads of horses were shipped from the National Stock Yards at East St. Louis, recently, to Canada, whence, presumably, they will be shipped to the British army. Ninety carloads went previously for Newport News, Va.—(Wichita, Kan., *Eagle*.)

VETERINARY MEDICAL ASSOCIATION OF NEW JERSEY: This organization will hold its annual meeting in Trenton, on Thursday, January 14, 1915. The president and secretary in behalf of its members want it understood that the usual welcome awaits any and all veterinarians from neighboring states who may feel disposed to look in on them during their deliberations.

WOULD STANDARDIZE VETERINARY COURSE.—Four years instead of three, and regular college requirements for admission, are the changes that will be adopted by the College of Veterinary Medicine at Ohio State University after this year, according to the vote of the faculty of the college. The trustees of the university have the final action to make the changes take place. Ohio State and Michigan are now the only two schools east of the Mississippi that permits students to enter this course without high school credits.—(Columbus, O., *Citizen*.)

HUMAN VULTURES.—Vultures in human form seem ever ready and waiting to swoop down upon their victims at the first opportunity. When the so-called *Horse Sickness* broke out in the Middle West two years ago, these vultures in the form of quack remedy venders began to fleece the horse owners by selling them "sure cures" that were absolutely worthless; and the same class of sharks are now endeavoring to fleece the cattle owners by representing themselves as in possession of a sure cure for foot and mouth disease. It is to be hoped that the authorities get these frauds and show them no mercy.

VETERINARIANS PRESENT GIFT TO DR. GEORGE W. DUNPHY.

—Dr. George W. Dunphy, of Lansing, State veterinarian, was the guest of honor at a banquet given by the State Veterinary Medical Association at the Hotel Tuller Saturday night.

Dr. Hutton was toastmaster, and toasts were responded to by Dr. Haladay, president of the association; Dr. Harper, secretary; Dr. Black, Dr. Lyman, Dr. Giltner, Dr. Brenton, Dr. Gibson, Dr. Krey, Dr. Wilson, Dr. Cummings, Dr. James J. Joy, live stock commissioner, and Dr. Hallman.

Dr. Dunphy was presented a handsome gift by the association, Dr. J. Hawkins making the presentation speech.—(Detroit, Mich., *Journal*.)

SERIOUS DISEASE AFFECTING SHEEP.—The department of agriculture has undertaken the investigation of a serious disease which is affecting the Rocky Mountain bighorn sheep and the mountain goats, and is reported as existing on the Lemhi national forest in Idaho. The forest officers think that it is the same disease that caused the mountain sheep to die in great numbers during 1882-3. The nature of the disease is not known, though it results fatally and sheep affected with it seem to have rough and mangy coats and are very much emaciated. Three bureaus of the department are engaged in the study—the Biological Survey, Bureau of Animal Industry, and the Forest Service. A competent veterinarian has already gone to Idaho to start the work.—(A Keokuk, Iowa, *Daily*.)

VETERINARIANS MEET WITH FARM CONGRESS.—Dr. C. A. McKim returned from Lincoln and Omaha Friday. At Lincoln he attended a meeting of the Nebraska Veterinary Medical Association. There were about 125 veterinarians present and it was a very profitable and enthusiastic meeting.

Wednesday noon the veterinarians were the guests of the Lincoln Commercial Club at luncheon in their beautiful new building, of which they have reason to be proud.

The Farmers' Congress, in session at Omaha, sent an invitation to send a delegation to meet with them. Dr. McKim was one of the ten veterinarians selected to attend on Thursday. It is hoped that much mutual benefit may be secured from a closer relationship of these two associations.—(Norfolk, Neb., *News*.)

HONOR DESERVED: A well-deserved honor was conferred last night, when the chamber of commerce elected Dr. W. H. Dalrymple honorary vice-president.

Dr. Dalrymple has been a power for good in Baton Rouge and for material development along correct and lasting lines.

While East Baton Rouge has reaped much of the benefit from his labors, his work has not been confined to any locality. He has striven for the good of the state, and there are few sections of Louisiana that are not better off because of his efforts.

We, here in East Baton Rouge, have not reaped the benefit that we should from the work of such men as Dr. Dalrymple and Dr. Dodson, and their staff at the state university experiment station.

There is a vast store house of knowledge at the experiment station that the farmers should tap. They and the territory in which they live would be better off if they made use of this knowledge.

Dr. Dalrymple has served Louisiana and especially Baton Rouge unselfishly and faithfully and he deserves the honors given.—(*Baton Rouge State Times.*)

THE LIFE OF HORSES ON THE FIRING LINE: That the average life of a horse on the firing line in France is about ten days was the astonishing declaration of a British army officer identified with the remount department. Horsemen were prepared to hear of unexampled wastage after reading about the havoc wrought by modern artillery and machine guns, but this report indicates such slaughter as had not been dreamed of in this country.

In the Civil War in this country the wastage of horses was at the rate of about 500 a day in the Union army, and the service of a cavalry horse under an active commander then averaged about four months. During his Shenandoah Valley campaign Sheridan required 150 fresh horses a day, and in eight months the cavalry of the Army of the Potomac was remounted twice, nearly 40,000 horses having been required.

If the British officer's estimate of the wastage is not wide of the mark, it is a foregone conclusion that before the carnage ends there will be such a shortage of horses as Europe has never seen. As most of the animals now in the field were commandeered from farmers and others who had been using them in agriculture and industry, they will have to be replaced for this work when peace is restored, and this demand, added to that of the war, will, it is believed, seriously affect the price of horses the world over during the next few years.—(*The Horse Lover.*)

HORSESHOEING VERSUS EFFICIENCY is the title of an article in the *Rider and Driver* of December 5, 1914, by *Bohemian*, in which its author displays a knowledge on the subject of shoeing horse's feet to meet the conditions of the diabolical asphalt pavement, that does not belong to an amateur. He tempers his excellent arguments, too, to meet the modern mind, that has lost a great deal of its *common* sense and is suffering from machine mania, and uses the automobile as an example. He compares the efficiency of an automobile or an auto truck, with steel tires on either vehicle, to those with rubber tires, on the polished surface of the average asphalt street, and applies the same argument to the horse's feet. There can be but one answer. For efficiency the horse's foot *must* be shod with rubber, and the greater the amount of rubber contact, the greater the efficiency of the horse. So that, while rubber horseshoe pads used with three-quarter steel shoes, are greatly superior to an entirely steel contact surface, a shoe that has a rubber contact over its entire surface is again far superior to the rubber pad. This latter system of shoeing the horse's foot, is in fact, the nearest to the perfection of a non-slipping shoe that has yet been devised. Rubber automobile tires slip on the asphalt under certain conditions, and so will the rubber horseshoe under the same conditions, but we are convinced by *Bohemian's* arguments and by experience, that the horseshoe with the rubber contact surface equips the horse with the greatest degree of efficiency. Veterinarians should give this subject careful study, as it is of vital importance to their clients and to themselves.

SECRETARY WALKLEY HAS AGAIN BEEN SIGNALLY HONORED by being again selected by the National Executive Committee of the Ass'n of B. A. I. Employees, to act as Legislative Representative at Washington during the present session of Congress, to promote the interests of the Lobeck-Lewis Bill, H. R. 9292-S5720. He deeply appreciates the continued confidence of the Executive Committee as manifested by this appointment and hopes to arrange to proceed to Washington, during the early part of January, 1915. In the meantime he is keeping in the closest possible touch with Representative Lobeck and Senator Lewis, regarding the Classification Bill. Representative Lobeck, when interviewed by Secretary Walkley in Chicago, on Sunday, December 6, urged upon the Bureau employees, the importance of publicity and unanimity of action in boosting the

Lobeck-Lewis Bill. He was glad to learn that the organization would endeavor to obtain endorsement of the Bill from Women's Leagues, City Councils, Boards of Health and other civic bodies, associations or societies, and gave the assurance that these endorsements would be of untold benefit in aiding in the passage of the Bill.

All local Secretaries of the National Ass'n of B. A. I. Employees are urged to keep a complete file of the official organ, *The Inspector*; as many official notices or announcements, including the official calls for per capita tax that have in the past been issued by this office in the form of circular letters, will in future appear in the official organ, under "*Secretary's Notes*."

MINNESOTA STATE VETERINARY MEDICAL ASSOCIATION.—Program of eighteenth annual meeting, St. Paul, Minnesota, January 13th, 14th; Minneapolis, Minnesota, January 15, 1915; headquarters at the Merchants Hotel.

Wednesday, January 13, 1915, 10 a. m., meeting: Board of Directors. Following the business session, a paper entitled *My Trip Abroad*, by Drs. S. H. Ward and M. H. Reynolds. Adjournment until 7.30 p. m., when, through the courtesy of E. V. Clark, manager, the H. K. Mulford Co. will give a banquet, stereoptican and moving pictures at "The Camel's Club," 43 S. 4th street, Minneapolis. Talk given by H. F. Palmer; also, *My Country*, by S. S. Whitbeck. The following papers are to be presented on Thursday, January 14, 1915: *Practice Act*, Dr. E. T. Phelps; *Rheumatism*, Dr. C. A. Nelson; paper, title not given, Dr. P. Casey; *Veterinary Service in the Far East*, Dr. D. Palmer; *The Veterinarian from the Farmer's Viewpoint*, Dr. F. W. Law; "*Relation of the Internal Secretion of Thyroids to Thyroid Hyperplasia*," Dr. C. C. Palmer; "*The Status of the Dairy Industry Under State and Municipal Inspection*" J. G. Winkjer, Dairy and Food Commissioner; "*Pathogenic and Non-Pathogenic Bacteria in Milk and Their Relation to Public Health*," H. W. Hill, Secretary, Public Health Association; SYMPOSIUM ON HOG CHOLERA: (a) *Hog Cholera Control*, H. O. Tellier, Farmington, Rep. of the Swine Breeders' Association; (b) *Practical Field Work*, D. F. E. Palmer; (c) *Proper Method of Serum Production*, Dr. Geo. H. Roberts, Indianapolis; (d) *Discussion Opened*, Dr. John F. E. Dinwoodie.

Friday, January 15, 1915, 9 a. m., clinic, Dr. C. E. Cotton's Hospital, at 615 4th avenue S., Minneapolis, in charge of committee, Dr. W. C. Prouse, chairman.

F. E. WALKER SHOULD GO.—Mr. Frederick E. Walker, commissioner of animal industry, confirms, in a formal reply to our recent editorial, his previous admission that he was notified on October 21, by one of his own agents, that a case of foot-and-mouth disease had occurred in the stockyards in Buffalo. He goes on to say: "From that time on every animal coming into Massachusetts was held in quarantine and was carefully inspected by federal and state authorities." This shows what Mr. Walker's advisers have now told him should have been done, but it is not what was done. No quarantine order of any kind against foot-and-mouth disease was issued in Massachusetts until November 7. Then, two days after his department had been notified that the disease had developed in this commonwealth itself, and one day after the federal government had established a quarantine against us. Mr. Walker issued an order forbidding the movement of all meat cattle, sheep, swine, etc., within the state, and another preventing the movement of hay. On November 11 a similar order was issued applying to poultry and pigeons as carriers of infection.

Mr. Walker's interests are rather with the dead than with the living, for between October 21 and November 7, when he says he had quarantined the state and had inspected every cow entering it, he had directed attention toward asking the federal and local inspectors to examine the cows brought in to our abattoirs for slaughter, while allowing carload after carload of cows to come in for sale among our farmers without let or hindrance. He is even now permitting cows to be sold here by auction so long as he is himself present to issue permits for their sale. This is a Canute-like action, which would be laughable were it not likely to entail such needless loss. The cattle commissioner should be a thoroughly educated veterinary surgeon. Mr. Walker is not a veterinarian at all. His blundering inefficiency has cost the farmers of the state heavily. He should resign his office, or be asked to do so. It is "no joke" to have the management of great affairs in the hands of the untrained and the incompetent. In nothing do the people more clearly "pay the price."—(*Boston Herald.*)

EACH NUMBER BETTER THAN THE LAST: Dr. Marnie Wesner of Illinois says of the REVIEW: "I look forward to each number, as I do to my meals—I feel as though I could not get along without it, as each number gets better."

IMPORTANT MEAT INSPECTION AND QUARANTINE DECISIONS: The Supreme Court of the United States has recently handed down decisions of great importance in the enforcement of the Meat Inspection and Live-Stock Quarantine Laws. The meat inspection law provides for the inspection of meat and meat food products before they enter interstate commerce. Among the provisions of this Act is one which prohibits anyone from unlawfully destroying, or altering marks, or other identification devices which are required to be placed upon the meat or the containers.

Some parties in Kansas City, Kansas, broke a Government seal on a car of meat and the lower court held that the Meat Inspection Act related alone to those engaged in the business of preparing meats for transportation and the carrying of such meats in interstate transportation. The Supreme Court reversed this decision and held, in substance, that the provision regarding identification devices applies to every person, firm, or corporation, or officer, agent, or employee thereof, no matter whether engaged in the interstate transportation of the meats or not. This decision will materially aid the Government in the strict enforcement of the law.

The Live Stock Quarantine Law prohibits the interstate movement of live stock from any territory quarantined by the Secretary of Agriculture, except under certain conditions prescribed by him. The District Court at Kansas City, Missouri, in the case of *United States vs. Nixon et al.*, construed the Act not to apply to receivers of railroad companies, for the reason that they were not mentioned in the statute. The Supreme Court reversed this decision, and held that the amendment to the original Act was intended to make the remedy as broad as the evil which was sought to be cured, and that the law, as amended, applied to any common carrier engaged in the interstate transportation of live stock. This decision is regarded of great importance in the enforcement of the law enacted for the protection of the live-stock interests of the country.—(Office of Information, U. S. Dept. of Agriculture, Washington, D. C.)

DR. W. H. ROBINSON, of Maine, in renewing his subscription, says: "Has my subscription run out? You will find inclosed check for 1915. Please notify me in the near future as I do not like to lose any copies, as I am filing them away and want to keep them all intact. I look for it the same as I do my meals." (The doctor was one of those anxious about his December number.)

VETERINARY MEDICAL ASSOCIATION MEETINGS.

In the accompanying table the data given is reported by many Secretaries as being of great value to their Associations, and it is to be regretted that some neglect to inform us of the dates and places of their meetings.

Secretaries are earnestly requested to see that their organizations are properly included in the following list :

Name of Organization.	Date of Next Meeting.	Place of Meeting.	Name and Address Secretary.
Alabama Veterinary Med. Ass'n	Mar. 5-6-7, 1914	Auburn.	C. A. Cary, Auburn.
Alumni Ass'n, N. Y.-A. V. C.	June 10, 1915.	141 W. 54th St.	P. K. Nichols, Port Richmond, N. Y.
American V. M. Ass'n	Pending	New Orleans, La	Nelsen S. Mayo, 4753 Ravenswood Ave., Chicago, Ill.
Arkansas Veterinary Ass'n	January 5-6, 1915	Little Rock.	R. M. Gow, Fayetteville.
Ass'n Médicale Veterinaire Française. "Laval"	1st and 3d Thur. of each month.	Leec. Room, Laval Un'y, Mon.	J. P. A. Houde, Montreal.
B. A. I. Vet. In. A., Chicago.	2d Fri. each month.	Chicago.	H. A. Smith, Chicago, Ill.
B. A. I. Vet. In. A., So. Omaha.	3d Mon. each month.	S. Omaha, Neb.	E. J. Jackson, So. Omaha.
Buchanan Co. Vet. Ass'n	Monthly.	St. Joseph.	F. W. Caldwell, St. Joseph, Mo.
California State V. M. Ass'n	December 10, 1913.	San Francisco.	John F. McKenna, Fresno.
Central Canada V. Ass'n	Feb. and July.	Ottawa.	A. E. James, Ottawa.
Central N. Y. Vet. Med. Ass'n	June and Nov.	Syracuse.	W. B. Switzer, Oswego.
Chicago Veterinary Society	2d Tues. each month.	Chicago.	D. M. Campbell, Chicago.
Colorado State V. M. Ass'n	January, 1914.	Denver.	I. E. Newsom, Ft. Collins.
Connecticut V. M. Ass'n	1st Tues., Feb., 1915.	Hartford.	B. K. Dow, Williamantic.
Delaware State Vet. Society	Jan., Apl., July, Oct.	Wilmington.	J. S. Houchin, Newark, Del.
Essex Co. (N. J.) V. M. A.	3d Mon. each month.	Newark, N. J.	F. A. Carey, East Orange, N. J.
Genesee Valley V. M. Ass'n	2d week, July, 1913.	Rochester.	J. H. Taylor, Henrietta.
Georgia State V. M. A.	Dec. 22-23, 1913.	Atlanta.	P. F. Bahnsen, Americus.
Hamilton Co. (Ohio) V. A.			Louis P. Cook, Cincinnati.
Illmo Vet. Med. Ass'n	Nov. 20, 1914.	E. St. Louis.	L. B. Michael, Collinsville, Ill.
Illinois State V. M. Ass'n	Dec. 3-4-5, 1914.	Chicago.	L. A. Merillat, Chicago.
Indiana Veterinary Association.	Jan. 14, 1914.	Indianapolis.	A. F. Nelson, Indianapolis.
Iowa Veterinary Ass'n	Dec. 9-10-11, 1914.	Cedar Rapids.	C. H. Stange, Ames.
Kansas State V. M. Ass'n	Jan. 5-6, 1915	Topeka.	J. H. Burt, Manhattan.
Kentucky V. M. Ass'n	Oct. & Feb. each year.	Lexington.	Robert Graham, Lexington.
Keystone V. M. Ass'n	2d Tues. each month.	Philadelphia.	Cheston M. Hoskins.
Lake Erie V. M. Association.	Pending.	Pending	Phil. H. Fulstow, Norwalk, Ohio.
Louisiana State V. M. Ass'n	Sent., 1914.	Lake Charles.	Hamlet Moore, New Orleans, La.
Maine Vet. Med. Ass'n	Jan. 27, 1915	Augusta.	H. B. Wescott, Portland.
Maryland State Vet. Society		Baltimore.	H. H. Counselman, Sec'y.
Massachusetts Vet. Ass'n	4th Wed. each month.	Young s., Boston.	W. T. Pugh, Southbridge.
Michigan State V. M. Ass'n	Feb. 3, 4, 1914.	Lansing.	W. A. Ewalt, Mt. Clemens.
Minnesota State V. M. Ass'n	Jan. 13-14-15, 1915.	St. Paul.	G. Ed. Leech, Winona.
Mississippi State V. M. Ass'n	1914.	Vicksburg.	J. D. Townsend, Louisville.
Missouri Valley V. Ass'n	Feb. 2-3-4, 1915.	Kansas City, Mo.	Hal. C. Simpson, Denison, Ia.
Mississippi Valley V. M. Ass'n	Semi-Annually.	Galesburg, Ill.	G. E. McIntyre, Alexis, Ill.
Missouri Vet. Med. Ass'n	July, 1915.	St. Louis.	Chas. D. Tolse, Kansas City.
Montana State V. M. A.	Sept. 24, 25, 1913.	Helena.	A. D. Knowles, Livingston.
Nat'l Ass'n B. A. I. Employees	2d Mon., Aug., 1915.	New York, N. Y.	S. J. Walkley, 185 N. W. Ave., Milwaukee, Wis.
Nebraska V. M. Ass'n		Lincoln, Neb.	Carl J. Norden, Nebraska City.
New York S. V. M. Soc'y	1st Mo. & Tu., Dec. '13	Ithaca.	H. J. Milks, Ithaca, N. Y.
North Carolina V. M. Ass'n	1915.	Wilson.	J. P. Spoon, Burlington.
North Dakota V. M. Ass'n	June 23, 1914.	Fargo.	A. F. Schalk, Agricultural College.
North-Western Ohio V. M. A.	Week of July 20, 1914	Delphos.	E. V. Hover, Delphos.
Ohio State V. M. Ass'n	Nov. 1913.	Columbus.	Reuben Hilty, Toledo.
Ohio Soc. of Comparative Med.	Jan. 6-7, 1915.	Upper Sandusky.	F. F. Sheets, Van Wert, Ohio.
Ohio Valley Vet. Med. Ass'n	Annually.		J. C. Howard, Sullivan.
Oklahoma V. M. Ass'n	Fall, 1913.	Oklahoma City.	C. E. Steel, Oklahoma City.
Ontario Vet. Ass'n	1st Week in Feb. 1914	Toronto.	L. A. Wilson, Toronto.
Pennsylvania State V. M. A.	March, 1915.	Harrisburg.	John Reichel, Glenendon.
Philippine V. M. A.	Call of President.	Manila.	David C. Kretzer, Manila.
Portland Vet. Med. Ass'n	4th Tues. each month.	Portland, Ore.	Sam. B. Foster, Portland, Ore.
Province of Quebec V. M. A.		Mon. and Que.	Gustave Boyer, Rigaud, P. Q.
Rhode Island V. M. Ass'n	Jan. and June.	Providence.	J. S. Pollard, Providence.
South Carolina Ass'n of Veter's.	Pending.	Pending.	B. K. McInnee, Charleston.
South Illinois V. M. and Surg. Ass'n	Aug. 4-5-6, 1914.	Salem.	F. Hockman, Iola.
St. Louis Soc. of Vet. Inspectors	1st Wed. fol. the 2d Sun. each month.	St. Louis.	Wm. T. Conway, St. Louis, Mo.
Schuykill Valley V. M. A.	Dec. 16, 1914.	Reading.	W. G. Huyett, Wernersville.
Soc. Vet. Alumni Univ. Penn.		Philadelphia.	B. T. Woodward, Wash'n, D. C.
South Dakota V. M. A.	Pending.	Madison.	S. W. Allen, Watertown.
Southern Aux. of Cal. S. V. M. Ass'n	Jan. Apl., July, Oct.	Los Angeles.	J. A. Dell, Los Angeles.
South St. Joseph Ass'n of Vet. Insp.	4th Tues. each month.	407 Illinois Ave.	H. R. Collins, South St. Joseph.
Tennessee Vet. Med. Ass'n	November, 1914.	Nashville.	O. L. McMahon, Columbia.
Texas V. M. Ass'n	Nov., 1913.	College Station.	Allen J. Foster, Marshall.
Twin City V. M. Ass'n	2d Thu. each month.	St. P.-Minneap.	M. H. Reynolds, St. Paul, Minn.
Utah Vet. Med. Ass'n	Spring of 1914.	Salt Lake City.	E. J. Coburn, Brigham City.
Vermont Vet. Med. Ass'n			G. T. Stevenson, Burlington.
Veterinary Ass'n of Alberta			C. H. H. Sweetapple, For. Saskat-chewan, Alta., Can.
Vet. Ass'n Dist. of Columbia	3d Wed. each month	514 9th St., N.W	M. Page Smith, Washington, D. C.
Vet. Med. Ass'n, Geo. Wash. Univ.	1st Sat. each month.	Wash'ton, D. C.	W. M. Cashell, 2115 14th Street.
Vet. Ass'n of Manitoba.	Feb. & July each yr.	Winnipeg.	Wm. Hilton, Winnipeg.
Vet. Med. Ass'n of N. J.	Jan. 14, 1915	Trenton.	E. L. Loblein, New Brunswick.
V. M. Ass'n, New York City	1st Wed. each month.	141 W. 54th St.	R. S. MacKellar, N. Y. City.
Veterinary Practitioners' Club	Monthly.	Jersey City.	T. F. O'Dea, Union Hill, N. J.
Virginia State V. M. Ass'n	July 9-10, 1914.	Staunton.	Geo. C. Faville, North Emporia.
Washington State Col. V. M. A.	1st & 3d Fri. Eve.	Pullman.	R. J. Donohue, Pullman.
Washington State V. M. A.	June, 1915.	Yakima.	Carl Cozier, Bellingham.
Western N. Y. V. M. A.	June 24, 1914.	Buffalo.	W. E. Fritz, 358 Jefferson St., Buffalo
Western Penn. V. M. Ass'n	3d Thu. each month.	Pittsburgh.	Benjamin Gunner, Sewickley.
Wisconsin Soc. Vet. Grad.	Feb. 10, 11, 1914.	Milwaukee.	W. W. Arzberger, Watertown.
York Co. (Pa.) V. M. A.	June, Sept., Dec., Mar	York.	E. S. Bausticker, York, Pa.

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AMERICAN VETERINARY REVIEW.

FEBURARY, 1915.

EDITORIAL.

EUROPEAN CHRONICLE.

Bois Jerome, 14th of December, 1914.

ABOUT ROARING.—This question is one which has always been of great interest to veterinarians and especially has it increased since the valuable contribution that Prof. Williams has given to its treatment by the operation, which carries his name, and which has found such a number of successful applications as our friends of the REVIEW have been able to judge by the records published by the English professor, Hobday.

It is on this account that I resume here some facts which I find related from German publications in the *Revue Generale* of Panisset.

The first that I read of is on *roaring due to the hypertrophy of the left thyroid gland*. This article was specially attractive to me, as it reminded me of one similar case, upon which I operated years and year ago and which from a worthless condition allowed a horse to resume his place on the turf, where he had at one time been a great winner.

The German article is resumed as follows:

“Classical researches of F. and K. Gunther have established that roaring was due in 96 per cent. of the cases to a paralysis of the left laryngeal muscles (posterior, transversal and lateral crico-arytenoideus), under the influence of recurrent paralysis of the same side. The question of knowing in what proportion the laryngeal paralysis is primitive is not yet solved. The examination of the larynx of roarers, made on the occasion of the

surgical treatment of the affection, has shown that the left muscular laryngeal paralysis could be considered as a cause of roaring even in more than has been heretofore stated. Out of 140 horses operated by Eberlein, 137 had crico-arytenoid paralysis, in one there was a tracheal tumour as the cause of the roaring, two were supposed to be due to hypertrophy of the thyroid. They are the subject of this record."

"The first animal, a thoroughbred mare, roared only when she was made to carry the head in some positions. Manifest when galloping, no matter how fast, roaring would stop as soon as the mare did and the head was left free. The left thyroid formed a tumor as big as a hen's egg, slightly rounded and of firm consistency. It was movable, neither hot or painful. The other thyroid was as big as a hazel nut. Laryngeal examination, with the laryngoscope, revealed no asymetry of the vocal cords. Ablation of the tumor was performed with chloral anesthesia. Four weeks after the animal did not roar any more, no matter what was the position of the head. Microscopic examination of the gland showed that the hypertrophy was due to the increase in size of the colloid substance, contained in the alveoli, which had their walls considerably thinned out."

"The second case relates to a horse whose increase of the thyroid gland had been noticed since the last few months. The gland to-day is as large as the fist. It is not warm or painful. Exercised, the horse makes a noise which it is not possible to distinguish from that of roaring. Laryngoscopic examination reveals nothing abnormal."

"The horse was operated. Roaring disappeared. Histological examination revealed the nature of colloid or follicular goitre."

The writer terminates his article by asking if roaring due to such condition, viz., the hypertrophy of the thyroid, can be considered as an inhibitory vice. And he answers in the negative, the trouble though chronic can be cured.

In another number of the same German paper another article on roaring has been published by Dr. E. Harms. It is a case of globo-cellular sarcoma of the trachea, which is presented as a contribution to the differential diagnosis of roaring.

"On account of the success of the surgical treatment of roaring, the number of patients has become so great that an abundant material has been obtained for observations and study of the disease. All the animals to be operated have been the object of thorough examination, so as to appreciate the degree of the affection. It is while making such that the author observed the case subject of this report:

"Tracheal tumors are rarely mentioned. Few observations exist of tumors following tracheotomy. The respiratory tracts seem not very favorable to the implantation of primitive tumors, nor to the development of neoplasms accompanying generalization.

"The animal in question had been seen by Harms once for abundant epistaxis. Respiratory noise appeared some time after. It has increased when work was heavy, and there was difficult breathing. It soon became such that tracheotomy had to be performed.

"Examination of the nasal cavities showed that there was no tumor or malformation. At rest the inspiration gave a slight, sharp noise which increased by the methodic pressure of the entire part of the trachea that can be explored. On a level with the region where tracheotomy had been performed the exploration makes the animal rebel against it. When the horse is exercised at the rope, after the first round, the acute noise increases, the inspiration becomes longer, the expiration is loud and strong and the mucous membranes become cyanotic. Laryngoscopic examination after exercise shows no alteration. Yet the diagnosis is positive neoformation of the respiratory tracts.

"The trachea is opened at the point of election for tracheotomy and there is exposed a soft neoplastic mass which fills up two thirds of the canal. The tumor is removed, the animal standing, and the wound exposed every day for two weeks to

X-rays. The microscopic examination revealed the nature, a globo-cellular sarcoma.

"The primitive epistaxis might have suggested the idea of a tumor of the nasal cavities, but this was eliminated by the introduction of a probe.

"The supposition of laryngeal roaring could also have been thought of. Epistaxis can be observed at the beginning of the acute laryngeal paralysis and the severity of the affection, the absence of difference in the intensity of the noise by compression of the arytenoids, were in favor of the diagnosis in as much as the deep inspiration could not be attributed to the nasal cavities. The very rapid evolution of the disease at a certain time and especially the entirely negative result of the laryngoscopic examination did permit to eliminate the idea of this diagnosis.

"There remained to know if there was stenosis by obstruction or by compression. Because of the negative result of tracheotomy the obstacle was thought to exist in front of the point of election of this interference and the rapid evolution of the disease favored the diagnosis of a tracheal tumor.

"The classical signs given for neoplastic tracheal stenosis are insufficient to insure the diagnosis. Rhino and laryngoscopic examination is the simplest and most certain process to do it.

* * *

TUBERCULOSIS IN SMALL ANIMALS.—Considering the important part that dogs and cats may play in the contagion of tuberculosis to man, and bearing in mind the influence that its presence in smaller domestic animals may have in the prophylaxy of that disease for humans, it is not surprising that it should have received at the hands of veterinarians the attention that it deserves. I may be allowed to refer to some of them and to consider the conclusions that the several investigations have brought forward.

The first observations relating to tuberculosis of dogs were already presented some time ago in the *Revue Veterinaire* of

Toulouse and were made by Profs. Sendrail, Lasserre and Lesbouyries. The principal part of their work relate to the diagnosis.

For them the clinical diagnosis is quite difficult during life; bacteriology and experimentation must be resorted to. The disease may be suspected if it is already existing since several months. The great emaciation and gradual loss of strength, the cough, acceleration of the respiration, the dyspnoea and the chronicity of the disease will suggest the idea of tuberculosis, and especially if there is besides ascitic pleuritic or pericarditic manifestations.

The experimental diagnosis is considered by those authors:

(a) The searching of the bacillus in the ejected products is rather doubtful, the negative result is not sufficient to deny the existence of tuberculosis.

(b) Inoculation of guinea pigs requires too much time.

(c) The diagnosis with tuberculine is the one to recommend. The subcutaneous injection of diluted tuberculine possesses an undoubtful specific action which is manifested by thermic reaction, general reaction and sometimes also a local reaction. The thermic is ordinarily early and with the authors had reached or even gone above 40 degrees from the 4th or 5th hour after the injection and has remained even superior to that for seven hours.

In relation to the etiology of the disease the contagion by man is generally positive.

As affected animals are dangerous to human beings the question of an early diagnosis seems to impose itself in those subjects.

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Following the publications of the *Revue of Toulouse* in the *Panisset Journal*, from Prof. Douville, a valuable article on *Tuberculosis of Domestic Carnivora*, where a few principal points are considered.

In relation to the frequency of the disease, Douville establishes it at about 4 to 4½ per cent. The statistic being made

out of 20,000 animals examined when alive or after post mortem. Breed has nothing to do with the development of the tuberculous process, which is met at any age, except in very old dogs, as canine phthisis does not allow them to live long: three or four months' puppies are suffering severely.

In cats tuberculosis is more rare, there is but 1 per cent. of tuberculous among them.

In relation to the etiology, Douville says that the infection can take place either by the respiratory or the digestive mucous membrane, although he inclines to believe that the former is most common. The disease is most frequent in animals that live or accompany their master in public places, where many people may be present and where infecting sputa can be picked up by the animals. In the majority of cases, canine tuberculosis is of human origin.

On the symptomatology the author writes: In most cases the process assumes a chronic form and takes several months before it becomes manifest. At first the symptoms are poorly marked, the animal is dull, sleepy, has capricious appetite, loses flesh gradually.

In the onset, pulmonary tuberculosis gives rise to dry, repeated coughs, with small nasal discharge or perhaps none; the temperature has variations of oscillations, rather elevated in the evening, then the cough becomes thick and is accompanied with nasal discharge, greyish or, by exception, purulent. Auscultation reveals pulmonary or pleuritic lesions, and soon the animal has the characteristic tuberculous features, indications of true physiological breaking down.

Chronic pleurisy is the most common localization. Abdominal tuberculosis is frequently manifested by ascitis. Tuberculosis of the other organs is also considered.

For the diagnosis, sometimes difficult to make, Douville considers that when it is made during life, it must be confirmed by the direct research of the bacillus and by the use of tuberculine.

The former is often negative. It is indeed rarely positive.

The bacilli may be found in the effusion of pleuritis or ascitis. For the latter, Douville's conclusions are based on some hundred thermic records of tuberculous dogs, after the sub-cutaneous injection of tuberculine 8/10th to $1\frac{1}{2}$ c.c., according to the weight of the animal. The reaction takes place from the 5th, 6th or 7th, seldom the 10th, hour. The general reaction is present in about one-third of the cases. Dogs, like bovines, have *accoutumance* to tuberculine, but it lasts only a short time.

The injection of tuberculine sometimes fails in about 40 per cent., says Douville. Sometimes it is dangerous, may intoxicate or be followed by death.

In cats, tuberculine is uncertain or may be dangerous for animals free from the disease.

Cuti-reaction gives imperfect results, also is the ophthalmic. Intra-dermo relation gives results which are imperfect and not as good as the hypodermic. At any rate, both can be used as controls.

To complete those considerations that are presented by French writers, I will extract from the *Annales de Medicine Veterinaire of Bruxelles*, where Professors Hebrant and Antoine have published an article on the *Tuberculosis of Dog and Cat*, relating a number of observations made on living subjects with the history, symptomatology, post mortem and microscopic examination.

For these authors, taking the number of animals they have treated as a base, the proportion relating to the frequency would be of 16 per cent. in dogs and 7.4 per cent. in cats.

The thoracic form of the disease is the most common, then comes the abdominal, the external is the most rare.

Relating to the diagnosis which they consider ought to be always made to confirm the one made by the examination of the animal, in their observations the ophthalmic reaction has given them 5 negative and 2 positive results out of seven tests, the cuti-reaction 4 positive and 2 negative, the subcutaneous 4 posi-

tive and certain; 3 had a temperature of 40 degrees after the starting of the hyperthermy.

The conclusions of the valuable paper from our Belgian confreres are:

1st. Tuberculosis of dogs and specially that of cats is frequent.

2d. Tuberculine reaction with carnivorous suspects of tuberculosis is the best mean for early diagnosis.

3d. Tuberculation by subcutaneous injections is the choice method for dogs and cats, providing the temperature is taken every two hours after the injection, the reaction taking place early. It must be preferred to cuti-reaction or ophthalmic reaction, which are uncertain in their results.

4th. If after subcutaneous tuberculation the temperature should rise to 40 degrees or above, the reaction must be considered as positive.

5th. On account of the probable human origin of canine and feline tuberculosis, it is proper to admit the possible return of the infection to man and to consider for him, domestic animals affected with that disease as dangerous.

* * *

SERO-DIAGNOSIS OF GESTATION.—The diagnosis of pregnancy by the method of Prof. Abderhalden is one which presents to obstetricians a great interest. The reaction of Abderhalden is of great practical value. It has been controlled by many investigators and besides its first application has resulted in many others.

In human medicine it has been the subject of many writings. In veterinary medicine it has received less attention; few researches only have been made in Germany, and Dr. C. Raduleslo-Calafat mentions only two as having been made in France; one in Alfort and the other at the Pasteur Institute.

The method of Abderhalden is based on the principle of the specialization of the albumines. The presence of the embryo is the occasion for the introduction in the blood of the mother of

albuminoid substances foreign to her. Then an antagonistic substance, a ferment of defense, will appear in the blood. If its presence is demonstrated, there is pregnancy.

To realize this, a portion of the organ containing the foreign albuminoid (the placenta) is taken. It is put in the presence of the serum to be examined. If there is in it an antagonistic substance, if there is gestation, the two substances will react on each other and the result shall be the digestion of the second by the first. If digestion takes place, there will be formation of a body belonging to the group of peptones; the problem then shall be to look for the presence of said peptone.

In the publication that is continued by Dr. Radulesco-Cala-fat, the various steps required to solve the problem are described and with them the technic which he has followed while working at the laboratory of Prof. Moussu at Alfort and experimenting on the value of the method from the veterinary point of view, and its practical application.

The following is the technic that has been used. It is the one given by the author of the method:

A placenta is required, one of a cow, mare, slut or guinea pig. Those of the cow or mare are the easiest to obtain. The cord, membranes, large vessels and blood being removed it is cut in small pieces. These are boiled for 5 minutes in five times their volume of water; the water is decanted and then another 5 minutes boiling, and so on until the water does not come blue any more by the addition of ninhydrine. Ordinarily, thirty minutes of boiling is necessary. When there is no longer blue reaction, when it is negative, the pieces of placenta are kept in chloroform and toluol and are then ready for use at any time, but it is better to test their condition.

The serum of the blood to be examined is taken shortly before the test is made.

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How is the reaction obtained? In the dialysor used there is introduced 1 gram of the coagulated placenta tissue and 2 c.c.

of serum are added. The apparatus is then placed in a recipient containing 20 c.c. of water. Both outside and inside liquids of the dialysor are covered with a coat of toluol and then the apparatus is placed in the autoclave at 37 degrees for 16 to 24 hours. After this lapse of time it is looked at to see if in the filtering fluid products of the separation of the albumines have passed, in which case the presence of gestation is confirmed.

The reaction is positive when, after the addition of 0.20 of a aqueous solution at 1 per cent. of ninhydrin at 10 c.c. of dialysal after boiling for one minute a blue coloration is obtained.

In publishing the results of his experiments, Radulesco-Calafat says that he has made 22 observations and has obtained only four doubtful answers. He mentions those of: 1st. Four-year slut which he knew was pregnant he obtained a blue violet coloration after the addition of ninhydrine; 2d. Of another experiment of control with negative results; 3d. A cow which had calved some time before, she gave a positive reaction which was to be supposed possible, as Abderhalden states that the reaction may occur some 8 to 15 days after delivery; 4th. Of a female goat which was known not to be pregnant, the answer was negative; 5th. A cow in the last months of gestation gave a positive answer, and so on. Out of 22 observations he has obtained 18 positive results and 4 remained doubtful.

It is evident from all of those that the sero-diagnosis of Abderhalden gives good results and that its application to the biological diagnosis of gestation possesses a practical value of the first order.

The technic of the method may yet need improvements, and when these have been made it will be easier of application and certainly render great service to agriculture and be of valuable assistance to veterinarians.

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CHEYNE-STOKES RESPIRATION IN HEAVES OF HORSES.—This peculiar respiratory trouble observed by Cheyne-Stokes and by the name of which it is known in scientific, medical and veter-

inary literature, consists in the alternate succession of respiratory arrests from $\frac{1}{2}$ to $\frac{3}{4}$ of a minute, followed by a series of respiratory motions almost of the same duration. The arrests being observed always during inspiration.

B—Jerks in expiration.
C—Jerks in inspiration.

A—Stops in inspiration.

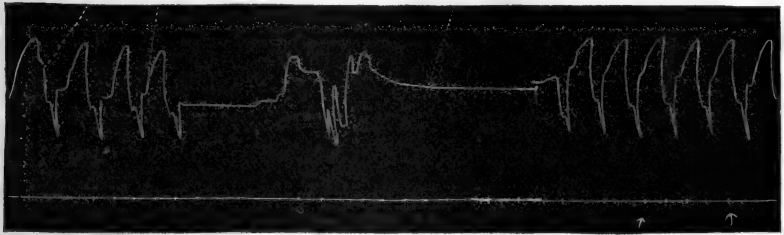


Fig. I.—Cheyne-Stokes Respiration. Pneumo-gramme obtained with Marey's method.

At the beginning of each series, the motions of respiration are slight, gradually increasing in depth and assuming a character of dyspnoea, to become again slighter and then to make room for another arrest.

It is then a *respiration clearly periodical or intermittent*, with greater or less intervals in the respiratory motions.

Such is Cheyne-Stokes respiration, observed first by him in 1816, in man.

The experimental researches that were made to elucidate the phenomena and its causal explanations are numerous.

Traube places it in the hyperexcitability of the respiratory centers. *Rosenbach* explains it as the result of the fatigue of the same centers.

Unverricht believes it due to the regulating troubles of the cerebral cortex upon the respiratory automatic centers situated in the bulb.

On this the experiments of *Pachon* have demonstrated that the periodic respiration is due to a deficiency of the normal exciting action exercised by the brain upon the bulb.

Leaving aside this field of pathogenic inquiries and looking into the clinical presence of the trouble, it is noticed that it has been observed most frequently in intracranial diseases,

cerebral oedema, apoplexies, cerebral tumors, uremia and cholemia when these diseases have a compressive, anaemic or toxic action upon the medulla oblongata. It has also been present in fatty degeneration of the heart on account of the lack of arterial blood supply in the respiratory centers.

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After these concise general considerations, Professor J. Poenaru, of the high school of veterinary medicine of Bucharest, writes of this disease in relation to veterinary medicine.

In animals *Volland* has published the history of a case where he has observed it in a horse suffering with colics and treated with an intravenous injection of 1 gram of chloride of barium. *Azary* has seen it after a subcutaneous injection of morphine. *Mouquet* in a horse that recovered from a nervous ailment.

To these cases the professor adds another observation of his own.

The animal was in poor condition, lean, with pale mucous membranes. He had no nasal discharge, but a dry cough. Percussion of the chest revealed sounds over the whole extent, and auscultation crepitating and sibilant râles. The pulse was only 50 per minute and the temperature and appetite normal. Submitted to the slightest exercise the horse became out of breath, the nostrils were widely dilated, the ribs raised suddenly were elevated under the skin. The inspiration and expiration had a marked jump and followed by a series of respiratory cessations of 11 to 14 seconds. The animal that had heaves showed consequently the *respiratory periodical motions* of *Cheyne-Stokes*.

Poenaru completes his remarks in saying: "In our case of pulmonary emphysema there was perhaps an attenuation or fatigue in the sensibility of the respiratory center of the bulb, because of a too reduced flow of arterial blood in the medulla oblongata and that the elements of excitation of the bulb were insufficient to stimulate the respiratory center, hence the manifestation of *Cheyne-Stokes*."

* * *

RABIES AND RENAL PARASITISM IN DOGS.—Taking as the heading of the record of a case of *Eustrongylus Gigas* in the kidney of a dog, Dr. Carlo Pomella, of the veterinary faculty of Parma, quotes from the work of Nocard and Leclainche in saying: "The diagnosis of a disease as proteiform, as rabies, offers "sometimes serious difficulties. The absence of the specific "symptoms of the disease during the entire or partial duration "of its evolution, the analogy of the manifestations observed "with those of morbid conditions of very different origin, the "lack of precise signs found at the autopsy, all of these often "bring about a possible confusion."

To-day all writers agree to these statements of the French authors in relation to the clinical form of rabies. It is true that all those who have studied and observed it have tried not only to prove how dogs, to all appearance sound and healthy, kind and affectionate, could be affected with rabies. But they have also attempted to establish by a special sense of observation what in dogs are the various morbid forms which by their complex symptomatology might be mistaken for rabies.

And it is as the result of this that many forms of disease are to-day spoken of as being likely to promote rabiform manifestations, such as intestinal pains, foreign bodies in the intestines, intestinal helminthiasis, cerebral cysticercosis, some forms of intoxication, distemper, central nervous complications, acute rheumatism, cutaneous irritating applications, the disease of Aujeszky and, finally, the *Eustrongylus Gigas*.

The record of the case reported by Dr. Pomella is just in relation with this. It has for its principal object to show that the presence of this parasite is not sufficient to justify the diagnosis of the absence of rabies and he puts the question, "Can one exclude rabies in a dog that, having died with rabiform symptoms, when at post mortem the kidneys have been found infested with *Eustrongylus Gigas*?" His answer is categorical—No!

If the parasite is found in a dog suspected because of rabiform symptoms and especially if the history exists of his having bitten other animals or people no definite diagnosis can be made

until negative experimental proof is obtained with histological and biological tests. The case of Dr. Pomella is reported as follows, in the *Revue Generale*:

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A five-year-old pointer has had distemper when young, but the disease has left him free from any suspicious manifestations of illness and he has always performed his duties to perfection.

At present the history changes. The dog has never presented any symptoms which would make him suspicious of rabies, but it has been observed that he has less appetite, has frequent vomiting, makes repeated efforts to micturate and only passes a few drops of thick, reddish urine.

When he is examined he is found in a poor state of nutrition, much depressed, with absence of motor troubles, the mucous membranes are yellowish, the cornea not sensitive, pupils not reacting, there is reduced sensibility in several regions of the body, respiration and heart beats reduced, pulse small, thready and soft, hypothermy. With palpation of the abdomen there is detected a tense voluminous body situated in the left anterior region of the body. Catheterization of the bladder is negative. The condition of the dog is precarious and he dies during the night of the examination without having presented rabiform manifestations.

The post mortem revealed nothing very particular except those of the bad condition of nutrition, atrophy of the muscles and general aspect of anaemia in the membranes. After the removal of the stomach and intestines the left kidney attracted attention. It was hypertrophied, rounded, cystic and floating in the abdomen. It was transformed into a fibrous cyst with very thick walls, containing some purulent fluid and three *Eustrongylus Gigas* measuring 50, 45 and 40 centimeters in length. The ureter was obliterated, the bladder empty. The balance of the autopsy showed nothing particular.

From all these lesions and history of the case it is proper

to conclude that uremia was the cause of all the troubles presented by this dog, and substantiate the evidence that if rabiform specific manifestations may be absent in dogs having *Eustrongylus* in a kidney the presence of the parasite cannot exclude the possible rabid infection if these manifestations have been exhibited.

A. L.

WE DON'T WANT TO DO IT OVER AGAIN.

We don't want our Army Veterinary Service Bill (H. R. 4541—S. 4541) to be strewn about the legislative chambers in Washington as wreckage when Congress closes March 4th. We hanker to see it put through, instead of being pitched into the waste-paper basket. It is in the greatest peril owing to the shortness of the present session of Congress, which finishes March 4th. It will be killed as sure as preaching unless we can get it brought to a vote within the next two or three weeks, even though all that remains for its enactment into law is to have it voted on favorably on the floor of the Senate. There are a thousand and one ways to kill a bill, and this is one of them—just don't give it the final vote it needs, and let it die. The Senate may do that; for there is the big excuse to give (which is supposed to be unanswerable) that the session is about at an end and the Senate calendar is loaded with heavy bills. An excellent piece of business this—to carry your veterinary bill along to a point where all it needs to make it law is to vote on it on the Senate floor, and then tell you that things could not be helped; there was no way to find an opportune moment to rush the bill through.

The profession is going to get a chance to do the work of putting the bill through all over again, from start to finish, if it "don't watch out." We will have to begin again and plough our way up hill for another two—four—six years; who knows how long? That is a thought we all relish; for we enjoy being set back and having to do the task again—maybe to almost finish and then start over again and over again. We have been doing this

kind of thing on Army veterinary service legislation for several decades. Congress will let us keep on doing it until "the crack of doom" if we don't attend to our business—the business of forcing action in the Senate on this measure, this month, and there end the rough road we have been travelling all these years for the reform of the Army veterinary service.

Action! Action!! This must be our battle cry. Ever action! This month; before Congress closes; action in the Senate! They'll kill the bill there if we permit it. Then returns the tedium; the nausea; the chagrin of having to do the work all over again.

Our hopes are hanging on four men:

1. Senator Chamberlain, of Oregon, Chairman of the Senate Committee on Military Affairs, whose committee passed favorably the bill.

2. Senator Luke Lea, of Tennessee, Chairman of the Senate Military Committee Sub-Committee, which favors the passage of the bill.

3. Senator John W. Kern, of Indiana, leader of the Democratic majority in the Senate.

4. Senator J. Hamilton Lewis, of Illinois, Democratic "whip," who keeps a quorum in the Senate in the interests of his party.

If our bill is to be called up for a vote on the Senate floor, senatorial courtesy requires that it must be done through either Senator Chamberlain or Senator Lea, because they handled the bill in the Senate Committee. The bill cannot be called up and taken care of on the Senate floor by either Senator Chamberlain or Senator Lea until an opportune moment arrives for consideration of bills on the Democratic program other than appropriation bills and administration measures. At that moment the weighty influence of Senators Kern and Lewis, who are for our bill, may be brought to bear to put our measure through.

Our dependence being on these four men, they must be kept continually reminded of our expectations and our hopes. This must be done by having all Senators plead with them for an op-

portunity for consideration of our bill. The bill is not dead yet, but it will be on March 4th unless our influence on our Senators is kept active until it is brought to a vote. G. S.

MORE ABOUT THE POSTPONEMENT OF THE A. V. M. A. MEETING.

We realize that you cannot place any market value on advice until it has been used, but even at the risk of it never being used we are going to differ with Dr. Campbell's article in the January issue of the *American Journal of Veterinary Medicine*. First because we are not sure he is right in his deductions and contentions concerning the postponement of the meeting of the A. V. M. A.; and secondly, because we feel that he has placed too much blame upon the great, broad shoulders of our good friend, Dr. Marshall.

It is a common axiom that our hind sight is better than our foresight, but we are not sure that we could apply this to the decision in postponing the date of our meeting.

After reading Dr. Campbell's article it first occurred to us that he was all wrong, but after due deliberation it is our judgment that our opinions would differ perhaps principally from the difference in viewpoint. Dr. Campbell states "that never before was there such an opportunity as the present to give such publicity to our association, its meeting and its actions;" and he cites that Illinois and Indiana had held two successful local meetings and had good attendance. We doubt if any local meeting would necessarily be a criterion as to the attendance that would be assured the A. V. M. A. when we consider the distance to be traveled and the time and expense that must be taken into account for northern, eastern and western veterinarians to attend a meeting at New Orleans.

Further, from Dr. Campbell's viewpoint, he doubts that the outbreak of foot-and-mouth disease throughout some 18 states would have prevented the attendance of State and Federal offi-

cers. From *our* viewpoint we agree absolutely with President Marshall, that but mighty few of the State officers in the north and east at least could have, or would have, attended. Surely many of the men that are worth while in considering serious matters could not attend with any contentment or satisfaction. In fact, for them to have *abandoned their posts* at such a critical time we believe would have precipitated a just criticism on our profession that we could not satisfactorily explain, and that surely could not be offset by the results of the meeting, had it been ever so successful.

Aside from State and Federal officers, in many rural communities a large majority of the most capable and progressive practitioners were either drafted into State service or kept extremely busy by being in constant touch with the livestock interests of their community.

Take these classes from your meeting and I fear the showing that the profession would make in the South would be rather lamentable and disappointing to our loyal southern friends.

We have said that we thought President Marshall was asked to bear too much of the criticism, and we believe he was; we appreciate the fact that propriety and modesty seal his lips and hence a word in his defence.

True, it is that Dr. Campbell and we, and, yes, the government and State employees, all probably knew what a task was ahead of those interested in the livestock sanitary control work when it became known that apthous fever was so widespread, but did *all* the members who were to cast their ballots realize the *gravity* of the situation, and would a post card ballot with *less* information and *less* statement of *facts* have been a fair and honest guidance to those who were not in a position to appreciate the situation? President Marshall put the facts squarely before the members; it was their privilege to vote just as they felt; those who were *not interested* in the control of Foot-and-Mouth Disease and cared little for the companionship, and part that many of the Solons of our profession would take in the next meeting could, and probably did, vote for the non-post-

ponement of the meeting. Others, and, we believe, the large majority, voted *for* its postponement. We feel, therefore, that the method which President Marshall and the Executive Committee saw fit to adopt was good, sound logic.

As it now stands, Dr. Campbell feels that the meeting should have been held and we feel that it should have been postponed. Let us meet each other half way. We'll agree that February and March is apt to be a busy time for the practitioner and college man, but Easter Holidays are coming, and while a little late, it is true, still we will have by that time gone through the experience of another epizootic and we will have mastered it and can add another successful triumph to our experiences.

If we cannot arrange a meeting before, why not then? Let us go and enjoy the southern clime at a time when the bluebirds return to us, and the crocus and woodland violets are peeping through, and our hearts are full of good cheer and good fellowship. Even the *grouchiest* of us at such a time could not fail to feel and appreciate the double distilled hospitality that has made Dixieland famous the world over.

J. F. D.

A SUMMARY OF THE SITUATION ON FOOT AND MOUTH DISEASE is published in this issue; beginning on page 574.

DR. FERGUSON FIGHTS FOR CLEAN MILK FOR EVANSVILLE.—At a recent meeting of the Southern Indiana Dairyman's Protective Association in Evansville, that State, the milkmen, while they endorsed a legislative measure that would provide for a State-wide tuberculin test, evinced keen hostility toward a milk ordinance that provided for the operation of such a test for milk sold in Evansville. When the arguments against the test got on his nerves, Dr. Ferguson could not refrain from taking the floor, and, "to the pathological objections to the test," says the Evansville *Sunday Courier*, "the strongest answer was given by Dr. A. T. Ferguson." More and more the veterinarian is taking his place in the management of civic affairs. We congratulate our good friend, Dr. Ferguson, who always expresses himself as he feels.

ORIGINAL ARTICLES.

THE USE OF DRUGS IN THE TREATMENT OF DISEASE CAUSED BY NEMATODE WORMS.*

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The class of nematode worms includes a large number of species which infest the domestic animals. Many of these species are extremely common parasites, but usually only cause disease when in large numbers and under certain conditions. As a rule, the most serious trouble is experienced amongst young stock. Some species often set up outbreaks of disease which may be likened to and in many cases are far more serious than contagious bacterial affections. As a rule, each species of nematode develops only in one, rarely two or more species of domestic animals. When taken up by its host it passes to and occupies quarters in certain specific situations. Frequently several species of worms are associated in the one animal.

The serious effects of invasion by these parasites vary very considerably and are frequently not characteristic. They may be local, depending on the position of the parasite, or general. The general symptoms associated with the presence of worms are unthriftiness, debility, and anæmia. Occasionally ascarides cause nervous symptoms. As for local symptoms, the nematodes in the alimentary tract may be responsible for diarrhoea. Ascarides occasionally cause impaction and even rupture of the bowel in horses; in the respiratory tract the nematodes cause bronchitis and pneumonia. It must, however, be remarked that some species of nematode worms appear to produce no symptoms, and even although those which occasionally do so may be present in considerable numbers, the host may appear in excellent health.

* Report to Tenth International Veterinary Congress, London, 1914.

This may be due to the method of action of these animal parasites in producing disease. They may act mechanically, produce toxins, or inoculate bacteria into the tissues of the host. Accumulating in great numbers in the intestines, ascarides may cause obstruction and by compression they may occasion even rupture and perforation of the bowel wall. In the bronchi and bronchial tubes strongyles may obstruct the passage of air. Penetrating the circulatory apparatus the embryos of filariæ may cause the production of emboli and aneurisms. Provided with an oval armature, certain worms, such as ankylostomes and sclerostomes, injure the mucous membrane, suck blood, and inflict lesions which may be accompanied by hæmorrhage. Mechanical irritation may provoke reflex nervous symptoms, such as convulsions or epileptiform fits, in the hosts of ascarides, but these troubles may also be attributed to the action of toxins formed by helminths. Leroy has observed the perienteric liquid of the *Ascaris equorum* kill a dog in half to one hour in the dose of 8 c.c. to 10 c.c. per kilo body-weight. Weinberg and Julien injected the sterile liquid from the same source into the conjunctival sac and nasal chambers of horses and observed a marked local irritation in animals not carriers of ascarides, but the reaction was not shown by carriers, probably because they had acquired some immunity against the toxin. Hæmolysins and anti-coagulins have been shown to be developed in the bodies of certain worms, ankylostomes, sclerostomes, ascarides. In the *Strongylus equinus*, hæmolysin is present in largest proportion in the cephalic portion of the worm. It may be said that these agents are developed by the worms for their own use in dealing with the blood derived from their hosts, but it is probable that some toxins are absorbed. This is more likely to occur when the worms die, as in the case of *Bibothriocephalus latus*, and then anæmia, emaciation, etc., result. With reference to the inoculation of bacteria, Weinberg has examined the intact tumors of the *Spiroptera megastoma* of the horse's stomach and found numerous bacteria in them. Dionisi attributes the pulmonary lesions in sheep affected with *S. filaria* to *Bacillus ovisepticus*. Tricocephales, oxyurides, sclerostomes,

spiroptera, which are capable of fixing themselves to the intestinal wall, inoculate the germs which adhere to the surface of their body. The ascarides favor infection by rubbing against the mucous membrane. Adult worms, their embryos or larvæ, emigrating into the bile ducts, peritoneum, circulation, and different organs, transport bacteria with them. The results will depend upon the nature of the bacteria inoculated.

The action of nematodes is therefore not absolutely dependent on numbers and on depriving the host of its nourishment. The serious results produced by their presence depend upon the toxicity of the toxins manufactured by the worms, the susceptibility of the host, the mechanical damage the parasites may do, and the variety of the bacteria they inoculate. In the latter case, when the bacteria enter the tissues and produce disease they are the agents to which the attention of the clinician must be directed.

The first object in all treatment of disease is to remove the cause: in this case the nematode worms. The removal of the worms is brought about by means of anthelmintics. The anthelmintics commonly used are oil of turpentine, coal tar creosote, carbolic acid, lysol, empyreumatic oil, naphthalin, thymol, santonin, arsenious acid, potassium antimony tartrate, common salt, sulphate of copper, sulphate of iron, areca nut, male shield fern, chenopodium, picrate of potash, kamala, kousso, quassia, oil of cade, carbon disulphide, asafoetida, eucalyptol, benzine, pomegranate, pumpkin seeds. The action of these drugs is to destroy or in some way affect the worms so that they are easily expelled from the body. They can thus only produce their effects when the worms are situated in a tube which leads to the exterior of the body. They do not act upon the nematodes in the tissues and their action is hampered when the worms burrow into the walls of the tube in which they live. Many of the drugs do not destroy the worms for a long time when in contact outside the body, and it is therefore probable that they only lower their vitality inside the body. Santonin, *e. g.*, does not destroy round worms; it would appear that it to some extent makes them drunk, so that they are no longer able to maintain their equilibrium

in the intestine and they are swept out by the movements of the bowel itself or by the purgative medicine which has been introduced (Lauder Brunton). In the use of these drugs care must be taken not to use toxic doses, but a sufficient quantity and proportion to exert a direct action upon the parasites. None of the agents mentioned is absolutely specific for certain species of nematodes, and hence the various anthelmintics are employed, either singly or in combination, against all the nematodes, according to the tolerance of the patient, the cost, convenience in administration, their efficacy, or the idiosyncrasy of the practitioner. The mode of administration of these remedies is affected to some extent by the position of the parasites. The most common nematode parasites occupy some part of the alimentary canal or the respiratory tract. When dealing with the worms in the stomach or intestines it is necessary to have these organs as empty as possible by withholding food and water for twelve or twenty-four hours to allow the drug, without undue dilution, to come into direct contact with the parasites. The anthelmintic may be accompanied or followed by a laxative, the latter is usually unnecessary when there is diarrhoea. The difficulties attending the removal of the worms can only be noted when the particular cases are referred to. When the worms are expelled the symptoms will disappear, unless some serious damage has been done to the tissues of the host. In the latter case treatment often fails. On that account anthelmintics are, in many instances, only of service in the early stages of disease, in some cases even before symptoms are set up.

The second part of the treatment consists in counteracting the effects of the worms by a generous diet and a course of tonics. Some of the anthelmintics, such as arsenic and sulphate of iron, will act in this way. If diarrhoea is present, it ought to be relieved by astringents. A generous diet is a most essential part of the treatment and is often more important than the drugs usually recommended. As a rule, parasites flourish more readily in the body of a debilitated animal. It may be that in debility the media furnished by the host are more favorable to the de-

velopment of the parasite, or that in a stronger body antitoxins are formed which inhibit the development of large numbers of worms or prevent their effects.

A third part of the treatment consists in preventing reinfection or preventing infection of susceptible animals sufficient to produce disease. It may be taken as an axiom in helminthology that each worm in the body develops from an egg, embryo or larva, which has entered from without. Worms do not go on multiplying indefinitely within the host. Hence the degree of possible infection depends upon the amount of contamination of materials taken in by a susceptible animal. At pasture this is often associated with overstocking. Reinfection can only be prevented when the ports of entry and the life-history of the worms are known. So far as we know, the large proportion of the nematode parasites enter the body with the food or water. In what way may drugs be used as preventive agents? In herbivora common salt should be added to the food or free access given to it. It will destroy some of the embryos or larvæ picked up, as well as stimulate digestion. Infection often occurs at pasture, and hence on infected lands the application of common salt or sulphate of iron in the proportion of 3 to 5 cwt. to the acre in the spring will be of service in destroying the eggs, embryos or larvæ which have survived the winter. When animals are known to have been exposed to infection, periodic doses of anthelmintic medicine should be given at intervals, even before the symptoms appear. This is a measure especially applicable amongst young herbivora. It is often successful with cattle, sheep and horses when they are grazing on infected pastures, especially low-lying, marshy lands, in preventing serious outbreaks of diseases due to strongylidæ and other worms. Indeed, it is attended with greater success than curative treatment when the symptoms of disease have been produced.

I shall now refer to particular cases, according to the position of the parasite, and in doing so will try to avoid repetition.

NEMATODES OF THE ALIMENTARY CANAL.—In equines one of the most common anthelmintics used is oil of turpentine in

doses of 1 to 2 oz. It is given in the morning fasting, either as a single dose with one pint of linseed oil, or administered on two or three successive mornings in a pint of milk, and followed by oil or other purgative. Potassium antimony tartrate is another good agent given in 1 to 4 dr. doses on several successive mornings in a mash of bran or in a little oats and then followed by a laxative, such as linseed oil or aloes 4 dr. and calomel 1 dr. A convenient method with foals is to give no water the evening before dosing, dissolve the drug in a pail of water and offer it in the morning before feeding (Grimme). If the diet is laxative, such as grass or bran mashes, a purgative may not be necessary. This drug is especially useful against *Ascaris megaloccephala*, it is not always efficacious, but may be repeated, is safe and improves the condition of the horse. White arsenic in doses of 3 to 10 gr., together with sulphate of iron 2 dr. is also a good anthelmintic, given in the oats or in a ball each morning for seven days and then followed by a purgative. Copper sulphate in 1 to 2 dr. doses, given with a vegetable bitter in the same way as arsenic, is also very useful. Other drugs used include santonin $\frac{1}{2}$ to 1 dr. doses (this drug does not appear to be so effective in horses as in dogs), carbon disulphide 3 to 4 dr. for adults, $1\frac{1}{2}$ to 2 dr. for foals, in gelatine capsules, given three or four times at intervals of two hours after starving for twelve to twenty-four hours and followed in twelve to twenty-four hours by linseed oil or aloes, carbolic acid, or lysol 1 dr. in a pint of milk daily for a few days, followed by a purgative, thymol 10 gr. to 1 dr., depending upon the age, in ball or in suspension in milk, administered for three days and followed by a laxative and after an interval of four days, if necessary, continued again. In this country it is common to give a mixture of these agents in powder in the feed or in a ball, *e. g.*, white arsenic 5 gr., sulphate of iron 2 dr., potassium antimony tartrate 2 dr., each morning for seven days, followed by a purgative on the seventh day. The agents are of very great service against *A. megaloccephala*, which occupies the small intestines, sometimes the stomach and colon, but they may require to be repeated after an interval in larger

doses. In some cases, however, the first symptoms produced by the presence of the worms in foals and young horses are those of impaction or rupture of the bowel. In the latter case nothing can be done to save the animal, and in the former it is not easy to discover the cause of the impaction. Fortunately, a purgative often expels some of the worms. Of the nematode worms of the intestinal tract of the horse the most serious are the various species of the strongylinæ (Sclerostomata), of which the types are the *S. armatus* and *Cylicostomum tetracanthum*. The adult worms inhabit the cæcum and the double colon and are often attached to the mucous membrane. The larvæ are often embedded in the submucosa of the bowel and the *Strongylus vulgaris* in its larval form invades the anterior mesenteric artery and its branches to the cæcum and colon, occasionally the celiac axis and other vessels, causing endarteritis, aneurism, and thrombosis of these vessels. During the past ten years I have found these worms in the anterior mesenteric artery in 80 per cent. of horses. The adult strongylinæ in the bowel are very difficult to get rid of and certainly the larvæ in the bowel wall, and the *S. vulgaris* in the vessels is not acted upon by the agents we have already noted. Thymol was introduced in the hope that it might be of service, but it also only acts upon the nematodes in the bowel. An interval is allowed between the courses of medicine in the belief that the larval worms may pass from the bowel wall into the lumen. One reason that the action of vermicides is not very certain, even on the adult strongylinæ in the cæcum and colon, is that the agents given are partly absorbed before they reach these organs and are very much diluted in the contents of these organs, which always contain a huge mass of ingesta, even after withholding food or fluids for many hours or days. Hence arsenic in its solid form is more likely to exert a vermicial effect upon the worms than some of the other more soluble agents. To be of service anthelmintics must be used before acute symptoms set in or the disease is far advanced.

Occasionally an enteritis is set up by the worms of the tetracanthum group and death follows very rapidly, even before any

treatment can be adopted, especially in foals and young horses. This may be the first indication of infection. When the larvæ are present in large numbers in the submucosa of the bowel, anæmia, debility, emaciation, and even diarrhœa set in. Here not only have we to deal with a worm infection, but also an invasion of the pathogenic organisms carried by these worms, as indicated by Weinberg. Anthelmintics in these cases are of no use, better results will follow a generous diet, oats, hay, milk and eggs, and a course of general tonics, liquor arsenicalis, carbonate of iron, quinine sulphate, but even then the prognosis is not favorable. The lesions in the anterior mesenteric artery due to *Strongylus vulgaris* are occasionally followed by rupture of that vessel in young animals and a fatal hæmorrhage results; sometimes large numbers of emboli are cast off and set up an embolic enteritis. In adults, however, aneurism and thrombosis of the mesenteric artery are frequently present without causing trouble, symptoms of colic which have been attributed to this cause can, as a rule, be prevented without any reference to these worms. Bockberg recommends in these infections in foals the intravenous or subcutaneous injections of atoxyl. In an outbreak which he dealt with among forty foals, eight died before treatment, and of the others twelve showed very marked symptoms of infection. The doses of atoxyl used varied from 3 to 7½ gr., in some cases as much as 15 gr. was given, and in one case 22½ gr., in 1 per cent. solution with 1 per cent. sodium chloride in water. Great improvement followed. Dorn recommends the intravenous injection of a 3 per cent. solution of atoxyl.

The Oxyurides, *Oxyuris curvula* and *mastigodes*, frequently infest the colon and rectum of horses. In the rectum they sometimes cause irritation and rubbing of the tail. The anthelmintics already noted given by the mouth have no marked effect upon these worms; they may act as adjuvants. The most efficacious treatment consists of the use of vermicide enemata, such as a 5 per cent. solution of common salt, 1 per cent. solution of lysol, an injection of vinegar, soap and water, an infusion of quassia or tobacco (1 oz. shag tobacco to 30 oz. water), perchloride of

iron (Tr. ferri. perchlor. 1 to 2 oz. to 2 quarts water): One quart of one of these solutions is injected each morning for three or four days, after removing the fæces by hand from the rectum. The symptoms soon disappear. *Spiroptera megastoma* and *microstoma* are sometimes found in the stomach, the former producing small tumors in the stomach wall, although they produce no evidence of their presence during life. Major Martin, in Poona, noted a case of rupture of the stomach due to this cause. *Spiroptera* were almost constant parasites of equines in that region. On experiment he found that the worms were not dislodged or affected by anthelmintics; even arsenic in 20 gr. doses twice daily for three days had no effect upon them.

In ruminants Strongyli of a number of different species are parasitic in the abomasum and intestines, causing very serious symptoms of gastro-enteritis, with anæmia. Of the strongyles of the abomasum, among sheep the most common in this country are *Hæmonchus contortus* and *Strongylus cervicornis*, and in cattle *S. convolutus* (*Ostertagia ostertagi*) and *Strongylus gracilis* (*Trichostrongylus extenuatus*). Some of these parasitic in the intestines are the *Strongylus ventricosus* (*Cooperia oncophora*), *Uncinaria cernuum* (*Bunostomum trigonocephalum*) in the small bowel and the *Sclerostomum hypostomum* (*Chabertia ovina*) in the large bowel of sheep and goats. Although some of these worms are common in ruminants of all ages, it is in young animals grazing on certain infected pastures that they cause disease, in lambs from three to nine months old, in cattle from six months to two and a half years. As to the action of vermicides on them, McFadyean, experimenting with specimens of the *Strongylus convolutus* isolated from the contents of the abomasum of an ox, observed that they were killed by 1 per cent. lysol in five minutes, and after twelve hours' exposure to $\frac{1}{2}$ per cent. lysol and chloroform water, but some only were destroyed in that time by 1 per cent. carbolic acid while in oil of turpentine 1 in 40 of milk, Fowler's solution of arsenic 1 in 40 of water, the worms remained active. Oil of turpentine is often used as the anthelmintic in these cases in doses of $\frac{1}{2}$ to 1 dr. to a sheep in 1 oz. of milk, and

2 oz. to young cattle given in a pint of milk or gruel in the morning. Coal tar creosote is especially recommended by Stiles. It has given very variable results, and this may depend to some extent on its variable composition. In a 1 per cent. solution the doses are: For lambs four to twelve months old, 2 to 4 oz.; sheep, one year old and over, 3 to 5 oz.; calves, 5 to 10 oz.; yearling cattle, 1 pint. One dose is said sometimes to be sufficient to effect a cure in sheep. Thymol in doses of 30 gr. to a lamb, 50 gr. to a yearling, 2 dr. to cattle, made into a paste with water and given in $\frac{1}{2}$ pint of water to a sheep, or 1 pint to an ox, has given good results in the hands of some practitioners. It may be combined with creosote, and is repeated in a few days.

As the result of the experiments of McFadyean, already referred to, the hope was entertained that in lysol was found a specific agent against Strongyles of the abomasum and intestines in ruminants. For young cattle the dose advised was 4 dr. in one quart of water, followed at intervals of two or three days by doses of 2 to 4 dr. In sheep half a pint of 1 per cent. solution has been given, followed by good results; but some owners assert that violent quivering of the muscles and immediate death may follow its administration. A common mixture used for sheep is \mathcal{R} chloroform 10 minims, ol. tereb. $\frac{1}{2}$ to 1 dr., lysol 10 minims, aquæ 2 oz. given three or four times in a fortnight. Arsenic, in my hands, has given better results than other drugs, in cattle from 5 to 10 gr., together with 2 dr. sulphate of iron; in sheep, arsenic 2 gr., iron sulphate 10 gr., given daily for six days in oats or bran. Dr. Theiler has shown that 15, 30 and 45 gr. arsenic in single doses cause no ill effects in adult sheep, whether they are watered twenty-four hours after or immediately after dosing. In sheep this method of treatment has the advantage that no drenching or handling is required. Drenching of sheep is attended with some danger and difficulty in a large flock. Copper sulphate is another remedy which may be given either dry in the food or in a 1.2 per cent. solution. In South Africa it has been recommended in a drench as a safe remedy in sheep. According to Dr. Theiler 22 gr. is a safe dose for an adult sheep, whether the

animal is watered directly after the dosing or only twenty-four hours later. The addition of liquid to the copper sulphate increases the toxicity of the drug. It is used in doses of 4 gr. for lambs three months old; 8 gr. for lambs six months old; 10 gr. for sheep one year old; $\frac{1}{2}$ to 1 dr. for calves. Other drugs used are male shield fern, benzine, picrate of potash, Charbert's empyreumatic oil, and tobacco. In all cases before administration the animals are taken up and not allowed food or water for twelve hours. With all the agents used variable results have been obtained and recorded, and they do not appear to correspond with the experiments made with the drugs upon worms outside the body. This may be due to one of two causes. In the first place all drugs taken in by the mouth pass directly into the rumen and reticulum and mix with the ingesta there before passing through the omasum to the abomasum and intestines. It has been asserted by Stiles and others that agents given while the animal is in the standing position or by probang are carried directly through the œsophageal groove and omasum to the abomasum. That I have shown on several occasions to be quite an erroneous belief. Hence, drugs given in fluid form are diluted to a large extent before they can act upon the strongyles in the abomasum, and even to a greater degree in the intestines. Probably on that account I have noted quite frequently at *post-mortem* examinations large numbers of live worms in the abomasum of animals which have received vermifugal treatment. In the second place, treatment is often not commenced till the symptoms are far advanced and the tissues not likely to recover from the damage which they have suffered, even although the strongylidæ are removed. Greater success has been attained in the treatment of disease due to *Hæmonchus contortus* in sheep than in the case of smaller strongyles, probably because the latter penetrate into the glands of the abomasum. The smallest of the species thus often cause more severe losses than the larger species. Those worms which have entered the mucosa are not acted upon by the medicinal agents used. In cattle tonics and astringents are administered after the anthelmintics, in order to relieve the symp-

toms of diarrhoea and anæmia. Reinfection is difficult to prevent unless the animals are taken up and housed. In all cases a generous diet, such as cakes and oats, is absolutely essential, and the measures adopted which have been noted in connection with the prevention of reinfection generally. Worm nodules in the intestines of native cattle and sheep, due to *Æsophagostomata*, are not observed in this country. As a rule, they do not interfere with the fattening of cattle and sheep, but in any case anthelmintics will only act upon the adult worms in the lumen of the bowel, they will have no effect upon the larvæ in the worm nodules. Marotel and M. Velu have met with enzootics of *æso-phagostomiasis* in bovines, due to the *Æsophagostomum radiatum*, in which the symptoms were similar to those of gastrointestinal strongylosis, and the mortality was great. No medicinal treatment proved of any service.

Ascarides are uncommon in the small intestines of ruminants in this country. They may be treated with success with any of the anthelmintics used for strongyles, and followed by a purgative.

In swine the most common nematode parasites are Ascarides (*Ascaris suilla* or *suum*). They develop in the small intestines, but occasionally pass into the stomach and bile ducts. In young swine one of the most common symptoms is convulsions, especially after feeding. A dose of 10 to 20 gr. of calomel is often sufficient to dislodge these worms. For sucking pigs Bru recommends calomel given in milk, followed by castor oil; for older pigs on a mixed diet, decorticated castor meal 1½ to 2 dr. associated with calomel, powder of male shield fern, wormwood and pomegranate seeds, then replaced by sulphate of magnesium or soda. The symptoms disappear rapidly. Extract of male shield fern (1 to 2 dr.) or areca nut (2 to 4 dr. for adults, 1 to 2 dr. for young pigs) given daily in the morning in milk or flour for a few days, and followed by a laxative such as calomel, or calomel and jalap, is also very useful. A similar form of treatment might also be tried in the uncommon conditions where a gastric catarrh is set up by the *Gnathostomum hispidum* or *Arduenna strongy-*

lina. Reinfection is prevented by giving vermifuge medicines to all incontact pigs, destroying the eggs and parasites in the manure by mixing the latter with lime, and disinfecting the styes and troughs with boiling water.

In the dog and cat *Ascarides* (*Belascaris marginata* and *Belascaris cati*) are extremely common parasites. They usually occupy the small intestines, but occasionally enter the stomach. In puppies only a few weeks old they frequently set up symptoms; but one must note that many puppies are dosed for worms when they are really suffering from distemper. Santonin is one of the best anthelmintics against these worms. It is given in doses of $\frac{1}{8}$ gr. per lb. body-weight, but not more than 4 gr. should be given in a single dose. It is administered in pill with calomel ($\frac{1}{4}$ to 3 gr.), or jalapin ($\frac{1}{8}$ to 2 gr.), or suspended in syrup of buckthorn (1 to 4 dr.) in the morning, after fasting for twelve hours. It may be repeated if necessary after an interval of three days. On account of the toxic nature of the drug great care must be taken in its administration to toy puppies; indeed, it should not be applied till the puppies are eight weeks old. Under that age a simple laxative may be given, which often brings away quite a number of worms. To the laxative 1 to 2 minims of oil of chenopodium might with safety and advantage be added. Other valuable drugs used are extract of male shield fern (8 to 60 m.) in pill or capsule, kamala ($\frac{1}{2}$ to 2 dr.) in milk, freshly ground areca nut (in the proportion of 2 gr. per lb. body-weight) in pill, capsule or suspension in syrup of buckthorn, thymol (3 to 8 gr.) in pill or capsule, either accompanied or followed in one or two hours by a laxative. If the dog vomits the medicine it may be repeated in a few days, preceded by a stomach sedative such as bismuth carbonate or chloretone.

There have also been recommended cortex of pomegranate, pumpkin seeds and oil of turpentine. As a rule the drugs which I have mentioned are very efficacious. When an animal is affected with fits attributable to these worms, it is necessary to administer a course of sedatives such as bromide until the worms are got rid of. To prevent the worms in puppies it is advisable to give

the bitch a dose of vermifuge medicine not later than the sixth week of pregnancy, and in addition to destroying the fæces and disinfecting the kennel wash the mammary glands with a disinfectant solution. Ankylostomiasis in the dog, due to *Ankylostoma caninum* and the *Uncinaria stenocephala* which infest the small intestines, appears to be rare in this country. In the cat a similar condition has been observed in Italy. The treatment employed is similar to that for Ascarides, but it is far more difficult to get rid of the worms on account of their attachment to the mucous membrane. Extract of male shield fern and kamala are specially recommended. Mégnin advises kamala in doses of 45 gr. to 1 dr. with 3 to 7 gr. of calomel and .075 to .09 grm. of arsenic. Thymol or eucalyptol might be useful judging from the results obtained with ankylostomiasis in the human subject. A generous diet (milk, eggs, flesh-food), cod-liver oil and tonics are very necessary to counteract the anæmia and debility. When the disease is advanced treatment is of little service. Animals frequently reinfect themselves, and it has to be remembered that the infection may occur not only through the food and water, but even through the skin (Cuillé). The kennel and food utensils must be thoroughly cleansed and the fæces destroyed.

In infection with *Spiroptera sanguinolenta* in the dog, or *Ollulanis bicuspis* in the cat, the condition is not diagnosed during life, and treatment is purely palliative, devoted to relief of the symptoms.

NEMATODES OF THE RESPIRATORY TRACT.—In the ass, occasionally in the horse, *Strongylus arnfeldi* (*Dictyocaulus arnfeldi*) infests the bronchial tubes, and in large numbers sets up a bronchial catarrh. It is probable that the same treatment employed for cattle might be equally beneficial for equines, but these parasites are often present in the ass without causing serious trouble. Among young cattle from six months to two and a half years bronchitis is caused by the presence in the bronchial tubes and trachea of *Strongylus micrurus* (*Dictyocaulus viviparus*), rarely the *Strongylus pulmonaris*. It is extremely common in this country towards the end of summer and during autumn in

animals grazing on certain lands. The earliest methods of treatment consisted in giving agents by the mouth similar to those advised for gastro-intestinal strongylosis, such as oil of turpentine, creosote, asafoetida. It must be remembered that many cases of verminous bronchitis are complicated with the gastro-enteritis caused by the strongylidæ of the alimentary canal; indeed, in some outbreaks I have met with the latter was responsible for a large proportion of the losses. On that account the agents given by the mouth are useful to deal with complications and to some extent may destroy the larvæ of the bronchial strongyles taken in with the food. Oil of turpentine and other drugs are excreted by the lungs, but in too small a proportion to exert a vermifugal action upon the nematodes of the bronchial tubes. The administration of drugs, such as sulphuric ether and oil of turpentine, by the nostrils, does not appear to me to be justified by the results; the effects are similar to those produced by drenching, and the method of administration is objectionable. Fumigations were later introduced to combat the disease. The various materials used for the purpose included burning tar, rags, feathers, horsehair, sulphur, chlorine, and iodine. In some districts sulphur dioxide and iodine are still used apparently to the satisfaction of the owner. For sulphur dioxide fumigations the calves are turned into a house in which all the openings are carefully stopped up, and sulphur burned on the floor until the operator can stand the fumes no longer. Then the burning of sulphur is stopped, and the calves kept in for half an hour or until the calves begin to show symptoms of dyspnoea. This is carried out on several occasions at intervals of one or two days. This method is not free from danger to the patient. With iodine inhalations each animal is treated separately. A small quantity of iodine is placed on a hot brick in a bucket enclosed in a sack, and the head of the calf covered with the latter. The inhalation is continued till the animal becomes affected with a fit of coughing. The most popular form of treatment at present in vogue is that introduced by Levi, of Pisa, and consists in the intratracheal injection of anthelmintics mixed with glycerine, oil, or water. By this means

the vermicides are brought into direct contact with the worms and embryos. Common mixtures are (1) Carbolic acid, 10 minims; chloroform, $\frac{1}{2}$ dr.; ol. tereb., glycerine, aa 1 dr.; (2) olive oil, 10 parts; ol. tereb., 100 parts; carbolic acid, 2 parts. One dose is $2\frac{1}{2}$ dr. The material is given by intratracheal injection every second or third day on two or three occasions. For the injection a strong syringe and needle are required. The skin over the trachea is best incised with a knife, and the needle inserted between the two tracheal rings in the direction of the chest. The material is injected slowly into the trachea, the head of the animal being kept elevated during the process to prevent the fluid flowing into the larynx. The agents used appear to act only upon the worms and embryos in the trachea and upper portions of the bronchial tubes. On one occasion I gave an intratracheal injection of one of the above mixtures to a calf evidently in a moribund condition. Two days afterwards it died. At the *post-mortem* examination the bronchial tubes were crammed full of living strongyles and their embryos, and there were also numerous strongyles in the trachea. Liquids injected into the trachea are rapidly absorbed, oil emulsions less rapidly than watery solutions, but they do not mix so readily with the mucus which surrounds the worms. Hence the treatment requires to be repeated. Calves in a weak condition occasionally collapse after the injection, and when pneumonia sets in from the irritation of the embryos and the inoculation of bacteria the injections are of no service. In those cases which recover on account of some strongyles being left the animal continues to cough for a time after treatment. In order to ensure that the anthelmintic mixture injected may reach the smallest bronchial tube and may thus come in contact with the worms and their embryos, Scheibel has introduced a spraying apparatus instead of a syringe. He employs first a special curved trocar and cannula, which he inserts into the trachea in the direction of the thorax. To the end of the cannula are attached two rings, by which it is kept in position during treatment by means of tape tied round the neck. After the trocar is removed the stem of a V-shaped spraying tube is

inserted into the cannula. To the branches of the tube are attached india-rubber tubes, one in connection with the bellows for blowing in air, the other attached to the vessel containing the vermicide mixture. The mixture he uses consists of \bar{R} creosote, 1 part; rectified spirit and water \bar{aa} , 50 parts; dose, $2\frac{1}{2}$ to 5 dr. During the spraying process the vessel is held lower than the cannula, so as to prevent the fluid flowing into the trachea. A pause is made when a fit of coughing sets in. The spraying is carried out daily for three days with invariably successful results. The method deserves a trial in this country. Intratracheal injections are not indicated when marked symptoms of pneumonia set in. The symptoms of the disease disappear with the onset of frost. As in all worm infections, a generous diet is of as great importance as the medicinal agents. In one outbreak in 1908 thirteen calves were affected; three died before treatment. I housed one of the most advanced cases, gave it no medicine, but allowed it 1 lb. of linseed cake per day in addition to other food; the others were allowed out, and were given intratracheal injections. All the animals recovered, and the untreated calf did as well as the others. It may be said, of course, that it was protected from further infection by being housed.

Among young sheep from three to nine months old a similar condition is set up by *Strongylus filaria* (*Dictyocaulus filaria*). This affection is treated in the same way as in cattle, but the doses employed are half to a quarter less. Zieman recommends as an intratracheal injection a mixture consisting of equal parts of a solution of iodine (iodine, 2 parts; potassium iodide, 10 parts; water, 100 parts), and oil of turpentine and olive oil to make an emulsion. The dose is 75 to 120 minims, and administered every other day on two or three occasions. It is difficult to apply the treatment to a large flock.

Lung lesions in the sheep, occasionally in the goat, are produced by the *Strongylus rufescens* (*Synthesocaulus rufescens*) and *S. capillaris* (*Synthesocaulus capillaris*). In this country very few sheep are free from small dark nodules in the lungs due to one of these nematode parasites. Occasionally small patches

of broncho-pneumonia are set up by the *S. capillaris*, but they do not appear to cause any serious disturbance. Very occasionally an acute pneumonia is set up, probably as the result of a bacterial complication. The infection in this case may be carried by the hay in animals which are housed. Intratracheal injections or fumigations can have no effect upon these diseases. Good feeding and stomachics, such as salt and sulphate of iron, are all that can be recommended. In young pigs in which a verminous bronchitis is set up by *S. paradoxus* (*Metastrongylus apri* and *M. brevivaginatius*) intratracheal injections are hardly admissible. Various mixtures containing asafœtida are often given, but prophylactic measures are of the greatest importance, consisting of the destruction of the affected animals and the disinfection of the discharges and the pig-styes. The disease may cause no serious trouble. In cats, lesions in the lungs similar to those produced by the *S. rufescens* in sheep have been occasionally produced by *S. pusillus* (*Synthesocaulus abstrusus*). Intratracheal injections have been suggested, but are not likely to be of much service. In many species of birds a verminous tracheo-bronchitis is set up by the *Syngamus trachealis*. Great mortality often results in chickens before they have got their feathers. One method of treatment consists in inserting a feather (from which the barbs have been removed save at the tip), through the mouth into the trachea, twisting it round, and pulling it out. Some of the worms may be removed from the upper portion of the trachea, especially if the tip of the feather is first dipped in oil of turpentine. This method is inadmissible with very small birds on account of the small size of the trachea. Good results have been obtained by intratracheal injections of a 5 per cent. solution of sodium salicylate. 1 c.c. (15 minims) is introduced with a syringe either through the mouth or by a bent needle pushed through the skin into the trachea. The worms drop off the mucous membrane after the injection, and are expelled by violent attacks of coughing. Fumigation with sulphur dioxide or tobacco smoke is not so useful. To prevent reinfection, 1 per cent. salicylic acid is added to the drinking water, the

sick birds separated, and the runs, coops, etc., carefully disinfected by 1 per cent. salicylic acid or sulphuric acid, and the ground turned over.

NEMATODES OF THE CIRCULATORY SYSTEM.—I have already referred to the *Strongylus vulgaris* in the equines. Filariae appear in various parts of the circulation of the horse, ox, and dog. The treatment of these conditions is symptomatic and unsatisfactory. Pease observed considerable improvement in horses affected with *Filaria sanguinis equi* in India from the use of cacodylate of sodium. Perhaps this drug or similar agents, such as atoxyl, might be of service in the conditions due to *Filaria immitis* and *Strongylus vasorum* (*Hæmonstrongylus vasorum*) in the dog. In Egypt, Mason found no medicinal treatment of service in dealing with disease due to filariae in the blood of camels.

NEMATODES IN OTHER SITUATIONS.—The worms in the connective tissues are no more effectively dealt with by drugs than those in the blood. The tumors caused by *Onchocerca reticulata* in the tendons of horses can be removed only by excision, but Pader and Druin consider antiphlogistic treatment best. The tumors may disappear spontaneously. This also obtains with the periodic patches of hæmorrhage on the skin seen in Hungarian, Russian, and Tartary horses due to *Filaria hæmorrhagica*. If the affected areas are kept clean and undisturbed the disease spontaneously disappears. "Summer sores" in equines caused by the *Filaria irritans* are best treated by complete excision of the granulations, and the application to the wound of strong antiseptics, such as 30 per cent. copper sulphate solution, an alcoholic saturated solution of picric acid, a 10 per cent. to 20 per cent. alcoholic solution of salicylate acid. Rey recommends the application of arsenic sulphide. A dry scab about $\frac{1}{2}$ in. thick forms, which falls off after eight to ten days, and healing soon occurs. No satisfactory treatment is applied to the worm nodules caused by the *Onchocerca gibsoni* in cattle. The treatment for *Filaria oculi* in the horse and *Filaria medinensis* in man and animals is purely surgical.

In cattle and other animals, conjunctivitis set up by varieties

of thelaziæ are successfully treated by first cocainizing the eye and removing the thelazia with forceps or by instilling 1 per cent. creolin or corrosive sublimate 1-2000 into the conjunctival sac daily for some days to get rid of the parasite. One also may have recourse to prolonged irrigation to expel the worms. If the presence of *Eustrongylus gigas* in the kidneys or other organs is ever diagnosed its removal will be purely surgical; no drugs are likely to act upon it.

IMPORTANT—THE NEW NATIONAL ANTI-NARCOTIC LAW.

The new Federal Anti-narcotic Law goes into effect on March 1, 1915, and under this law every veterinarian is required to take out a narcotic license from the national government; this license will cost \$1 per annum. He is also required to use official blanks, supplied by the Government, in ordering his supplies of opium, morphine, codeine, heroin, cocaine and the various mixtures, compounds and derivatives of opium and coca leaves. These blanks will probably cost \$1 per hundred. No retail dealer, jobber or manufacturer will be permitted to supply any of these drugs to any physician or veterinarian unless such an official blank is used in making the order.

The veterinarian is also required to keep records of drugs dispensed, *providing he is not in actual attendance upon the patient requiring them*. No record is required of drugs which he personally dispenses to a patient. Perfect freedom in dispensing his own drugs is in no wise interfered with.

The veterinarian who has not secured his license promptly by March 1 will suffer much inconvenience, since he can neither buy any of these narcotic drugs nor prescribe them without it. The pharmacist will not be permitted to fill any prescriptions calling for narcotics signed by *unregistered* veterinarians.

The license and order-blanks can be procured only from the COLLECTOR OF INTERNAL REVENUE in the district in which the veterinarian lives, and all veterinarians are urged to write at once to their local Collector, asking for proper application blanks in order that they may secure their license and order-blanks in ample time, and avoid the embarrassment that will confront them on March 1st if not prepared.

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A New System of Therapeutics.

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The mortality among nursing infants during the summer months is generally considered from two aspects, namely, preventive and therapeutic. An incomparably better method of treatment than those previously employed, is the unmodified antitoxin treatment previously advocated by me.

In the present paper I will take up this new method of combating infectious disease with unmodified antitoxins or with substances antidotal to the action of all of the toxins pathogenically active in the patient's body. This method I call *autolactotherapy*, or unmodified antitoxin therapy.

That innumerable pathogenic micro-organisms enter the body daily is well known. Myriads enter with the inspired air. They are taken into the system in massive doses, at every meal and in other ways. Many of these are constantly being destroyed by the protective agencies or fluids of the body. During their destruction their toxins go into solution by autolysis. In response to the action of these toxins the healthy tissues produce protective agents—the antitoxins. These are found in the various fluids of the body, as the milk, blood, etc. The process of producing antitoxins in the body is continually going on, as the supply of micro-organisms is continuous and varied. For the same reason the lower animals also produce antitoxins in their blood, milk, etc. Beside the antitoxins continually produced in our bodies in response to the micro-organisms entering it, we take into the body the antitoxins produced in the animal, by eating the meat and drinking the milk of the animals. It is probable that many of the antitoxins in the meat are destroyed by heat. As the

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result of many tests made by me in autotherapy, I hold that the mouth is the natural channel through which live micro-organisms pass into the healthy tissues and there safely establish immunity. The opsonic index is quickly raised when many varieties of live pathogenic micro-organisms are taken into the comparatively healthy tissues through the mouth, *i. e.*, the staphylococcus, streptococcus, colon bacillus, etc. This has been abundantly proved daily in the clinic by many thousands of tests by myself and hundreds of other physicians. I was the first successfully to employ the live pathogenic micro-organism as a therapeutic agent.

By taking into the mouth the unmodified antitoxins produced by the animal, we acquire passive immunity. This in the past has been done in a haphazard manner during the regular process of taking nutrition. It is the object of this paper to show how this haphazard process may be controlled in a measure, *i. e.*, placed on a scientific basis and utilized in a very simple manner both in prophylaxis and in the cure of disease.

Experimentally it has been shown by MacClintock and others, that a guinea-pig will absorb *in an empty stomach, in one hour, sufficient antitoxins to protect it against five lethal doses of the corresponding toxin*. It is well known that the antitoxin of the toxin of a given pathogenic micro-organism will cure more cases of the corresponding disease than a toxin or vaccine of that micro-organism will cure. That is to say, the antitoxin does not have to be so individualized to act therapeutically as does the toxin. The antitoxin tends to be curative in practically every patient having the corresponding disease. It is more general in its application as a therapeutic agent than the toxin or vaccine. To be most curative, the toxin or vaccine must be taken from the individual patient's body. The range of cure of the toxin, therefore, is narrowed down to the individual from whom it was taken, unless it cures by accident.

Milk is the food that has ever been held in the highest esteem by all civilized people in all ages for the convalescent, the invalid, and the very young. For these it stands alone, the food supreme.

It is seldom contraindicated and is usually borne well, by even a weakened stomach. It is the natural food the mother supplies to her offspring. But as Nature seldom does things by halves, we find that it has another important function that may be utilized, that of transmitting the immunity of the mother to the child. Understanding in a measure how this is done, as the result of many clinical tests on human subjects, I take advantage of the principle that underlies the immunization of the young through milk, and employ it in immunizing both the mature and young (*American Practitioner*, October 1, 1913).

It has been beautifully designed by provident Nature, that the psychic affection and love manifested by the mother in nursing her baby, physically transmits through her milk to the child, substances that protect it against bacterial invasion. The human mother does not always as effectually protect her offspring against bacterial infection by the antibodies contained in her milk as do the mothers of the lower animals. The reasons for this will be pointed out later. It is then clearly the duty of the physician to enter on the scene of the life struggles of the infant and make up the deficiency, where possible, by adding those protective agencies, the *unmodified antitoxins*, to the human mother's milk in which it is deficient. One method of doing this is illustrated in the following test:

CASE I. Patient, female, nursing baby aged ten months, was presented for treatment, suffering with a severe bronchitis. There seemed also to be present an associated rhinitis, for mucus flowed quite freely from the nose. The condition had persisted for about ten days. As to treatment, the mother was instructed to collect during the morning upon small pledgets of cotton as much as possible of the mucous flow from the nose and to place these in a bottle and bring them to the office. There were about twenty pieces in an ounce bottle. The bottle was filled with water and allowed to stand for twenty-four hours with occasional agitation, after which time the contents were expressed and passed through a Berkefeld filter. Two c.c. of the bacteria-free filtrate was then injected subcutaneously into the mother and a dram was given

to her by mouth. The mother said she had a slight headache the next day, and was somewhat feverish. The cutaneous reaction was about the size of the palm of the hand. Forty-eight hours after the injection, however, the baby was distinctly better and progressively recovered without any other medication. This test has been repeated successfully several times.

The baby received the unmodified antitoxins to its own toxins developed in the mother and passed to the child through the mother's milk. It is well known that the very young can present but little resistance to an invasion of pathogenic micro-organisms. Nature designed that the mother should acquire resistance to infections for it. In the light of autotherapy, this cure is plain when we recall a common every-day occurrence, and perceive it in the light of scientific reasoning. In the lower animal families, as in the cat and dog species, the mother constantly licks any and all of the discharges that adhere to the orifices of her young. She seems constantly to be employed in this loving, watchful care, and in the colitides, bronchitides, sore eyes, etc., that often appear in the very young, she, by this practice, quickly elaborates in her body antitoxins to the toxins of the micro-organisms pathogenically active in her offspring. These antitoxins transmitted, not only cure the one infected, but immunize all of the rest against the bacterial infection in question. Following out this line of thought, we are forced to conclude that since the antitoxins of commerce are developed in animals in response to the injection of filtered toxins, if a cow, she goat, or other female lactating animal, is injected with filtered toxins from which a given patient suffers (*e. g.*, bronchitis, enterocolitis, purulent infections, etc.), the injected animal should acquire antitoxins to all of the toxins present in the patient. The patient drinking the milk of such an immunized animal, would thus receive substances antidotal to all of the toxins active in his body, and this, too, without extra tax upon his strength or danger of calling forth anaphylaxis. The patient is thus cured in the quickest and easiest manner possible, for there would be no systemic disturbances, such as rise in temperature, chill, headache, fever, etc. Every one may have an

animal to withstand the strain incident to the development of substances directly antagonistic to the disease or antidotal to the toxins in a given case. In fact, several of my patients have lactating goats for this purpose. They are as conscientious almost in looking after the goats' interests, in buying a daily supply of beets, cabbage, etc., as for one of the family.

All that is necessary to do, is to filter the exudate from the patient's body and inject the bacteria-free filtrate subcutaneously into the animal. In many instances he may simply give the exudate to the animal by mouth. After developing active immunity in the animal, the animal's milk is given to the patient to drink when nourishment is required. In this way the patient takes the unmodified antibodies into the empty stomach where, as previously stated, it has been found that they are readily taken up by the tissues, thus rendering the patient able to resist the action of the toxins active in his body. A healthy lactating woman would be ideal for this purpose, for then we should have the ideal substance for combating disease—the human antitoxins. But the danger of infection from a woman, who previously may have contracted some disease, might be a factor that would militate against the general adoption of this agency. Also the blood of the animal bearing the burden of the disease may be used to convey the antitoxins from the animal to the patient.

It is but a very short step from the animal mother in the care of her young, to the human mother in the care of her young. The remarkable feature is that there are few mothers who would not as a last resort cure their babies, no matter what the cost might be to preconceived ideas. One said she would gladly do it if necessary, that there was nothing about her baby that was abhorrent or revolting to her. It was part of her body; it came from her body, she nourished it with her body, why should she not save its life in the same way? The mother will rarely be called upon to lick the moist gangrene from the umbilical stump, or the palatal ulcerations of the new-born, or taste the pathogenic discharge from the colon, or the mucus from the nose, or pus from the eyes, for the physician is usually at hand to administer

the more elegant preparation in the manner suggested. The life of an heir means much at times, both to the present generation and to posterity; it always means much to the mother. In such cases, no power within the scope of human endeavor would be overlooked to save the life of the offspring; anything that would do this would be frantically welcomed. To be sure, other means often cure these conditions, but the method here presented appears to be a very certain cure in many maladies, if the treatment is not too long withheld.

Enough has been said to indicate that no mother would hesitate to take the discharges if she was convinced that it would save the life of her baby. Would the physician hesitate to give effective medication simply because it was not esthetic or palatable? The case may be urgent and time an all important factor. The physician may not have the Duncan autotherapeutic apparatus and it would take too long to obtain one. From a therapeutic point of view the method of licking the discharge is the natural method bequeathed by old Dame Nature for the protection of the life of the young by its own mother, its natural protector, its life giver, now its life saver. Oh! the beauty and completeness of Nature and her ways.

The next case was in a very poor family:

CASE II. Patient, male, nursing baby two weeks old. The delivery was normal, and everything progressed apparently satisfactorily. The writer was called. He found an extensive excoriation of the gluteal region around the anus. Both folds were inflamed, very red, with much induration. He prescribed the usual remedies for this condition and left word to be called if there was no improvement. Two weeks later, he was again called. At this time he found the inflammation had apparently extended over the whole body in the form of small pustules. There were many on the head, back, and body. On the following day the mother had a large boil on the *mons veneris*, showing she, too, had a lowered index to the infecting pyogenic micro-organisms. On the following day the boil was opened and a dram of pus

liberated. Microscopically, this was diagnosed to be streptococcus, short chains, pneumococcus moderate, occasional bacilli.

She was given five drops of this, mixed with an ounce of water by mouth, in three divided doses, an hour apart. Within twenty-four hours a distinct change came over both mother and child. The mother had no pain and was comfortable. In forty-eight hours, the pus had dried up, leaving only some redness to mark the site of the furuncle. The baby went quickly on to recovery. Its temperature became normal, the pustules dried up, it stopped crying. Four days afterward, the child was apparently well, with smooth soft, healthy baby skin.

The unmodified antitoxins developed in the mother passing to the child through the mother's milk are the main factor upon which the resistance of the child to bacterial infection depends. This, then, is one of the reasons why a bottle fed infant is more prone to bacterial infections than a breast fed infant. The bottle fed infant acquires immunity to the micro-organisms to which the healthy cow is exposed. It is possible that the cow under normal conditions does not take the micro-organisms to which the infant is commonly exposed, in sufficiently large amounts from her food, as grass, hay, etc., as to cause a very great amount of acquired immunity in the human patient drinking her milk. If the cow is systematically immunized with the unmodified toxins of the pathogenic micro-organisms that infect a given patient in sufficient amounts, she will produce a relatively large amount of antibodies to the injected toxins respectively, an amount sufficient to give passive immunity to the corresponding micro-organisms to the human being drinking her milk. For it must be remembered that the nursing infant or invalid would take the antitoxins in the milk, on an empty stomach, in comparatively large amounts and that continuously. This method of treating patients appears to be far reaching, and its importance is hard to estimate at the present time.

For many years the writer has never given a nursing baby a cathartic or laxative. He gives it to the mother, and the results are positive and apparently better than when given to the child.

Calomel given to the mother is especially effective in moving the baby's bowels. In view of this fact, I ask myself the question: "Is it not possible that some of the intestinal disturbances in bottle fed babies are due to intestinal disturbances of the cow manifested by her loose stools, caused by the food she eats, some particular kind of plant or grass or weed, that acts on her bowels as a cathartic?" If intestinal disturbances of the bottle fed infant are due to infecting micro-organisms, or to dysentery in the cow, what becomes of the highly complex formulas or percentages for infant feeding worked out for these cases? It appears that percentages of infant feeding in these specific cases should be employed simply as adjuvants. It seems that if more attention was given to the feeding of cows there would be less intestinal disturbance during the summer in bottle fed infants. It appears also that if the cows were immunized to the micro-organisms that commonly infect the bottle fed infant, there would be even fewer disturbances of this kind.

It is well known that strong mental impressions of the mother often affect the nursing infant seriously, through the toxins so generated in her body, being transmitted to the child through her milk. Carpenter's *Physiology* mentions several cases where death occurred in the nursing infant by the transmission of toxic substances that were generated in the mother by a strong mental impression, to the child through the mother's milk.

CASE III. During the early spring of 1914, Professor William H. Dieffenbach, of New York, was severely poisoned with poison ivy while working on his farm. His ears swelled to three times their natural size. His face and arms were covered with blisters. He became so acutely sensitive to the poison that he would have another attack by even riding through the country in his automobile. He has had six distinct attacks during the spring and summer. In fact he could not go into the country without having an attack. He tried over thirty different remedies without effecting a cure. Having read a paper by me on the subject of unmodified antitoxin therapy or autolactotherapy, he decided to test it on himself as a patient. Accordingly he

had his hired man give one of his cows the leaves of the poison ivy for several days. He then drank about a quart of this cow's milk. In a few hours, the stinging, biting sensation became less, and the painful itching gradually subsided. He improved and made an uneventful recovery. He has been up to the farm several times since with no sign of recurrence. The cow apparently thrived on the leaves.

In view of the extreme sensitiveness or low resistance Professor Dieffenbach manifested to the toxic principal of poison ivy, and the quick response he made to the antistoxins in the milk, I ask myself the question: Would several patients whom I have formerly treated with the filtered toxins from their own infecting micro-organisms, and who had extremely low resistance to them, have been benefited by the antitoxins of these toxins that were generated in an animal and transmitted to the patient through the milk? The affirmative answer, it appears, we are bound to give, opens up therapeutic possibilities that are endless. The writer has never seen any appreciable systemic disturbance following the use of unmodified antitoxins.

CASE IV. Patient, female, aged thirty-nine years, had been suffering with a cough for five years, following pneumonia. Eighteen months ago it was diagnosed as pulmonary tuberculosis. When first seen by the writer during the early part of July, 1914, she was in a rapidly advancing stage of the disease. The upper lobe of both lungs and the lower lobe of the right lung were involved. She coughed the greater part of the night and raised much mucus. She had night sweats and lost considerable weight, her present weight being eighty-three pounds. Evening temperature 100 degrees F. plus, with morning remissions. It was decided to treat the patient by autolactotherapy. Accordingly on Wednesday, June 29, 1914, a healthy lactating goat was injected with one c.c. of the filtrate of her sputum prepared in the usual manner, and the following day she began to take the animal's morning milk. On the following Sunday night, to use her own expression, "I slept like a baby the whole night through. I did not cough once during the night and had no night sweats." This

patient is improving in every way. It is too early to offer a favorable prognosis, but it is certain that here is a case of advanced pulmonary tuberculosis that is apparently improving by a new method of treatment.

It seems as if large firms making a business of supplying milk for infant feeding, could add immunizing qualities to the milk without in any way interfering with the percentages of the composition of the milk. They could possibly supply the antitoxins in the milk that would tend to combat or antidote the pathogenic micro-organisms or the etiological factors of some forms of dysenteries, diarrhoeas, bronchitides, etc. They could place a certain number of cows aside to produce milk that would combat infections caused by the staphylococcus, streptococcus, colon bacillus, etc., and use this milk for infant feeding, both as a prophylactic and therapeutic agent. At my suggestion, one large milk laboratory is making tests along this line this summer.

Let us assume for the sake of discussion that an epidemic of typhoid fever breaks out in a community. If this treatment is effective in typhoid fever, the authorities will see that the community is immediately supplied with antityphoid fever milk, or milk from cows that have been immunized with the toxins of typhoid fever. The patient will purchase, or be supplied by the department of health with antityphoid fever milk. Thus the whole community will be quickly and safely immunized to typhoid fever by employing the most common necessary article of food, and that without any danger. Carrying this conception still farther, we might possibly anticipate or antedate an outbreak of an epidemic by supplying antidotal milk before the time statistics indicate that it is liable to occur. We now largely control the conditions under which the supply of milk is obtained and its passage to the consumer.

It would take a somewhat more rigorous regulation of milk, to be sure, but this is not a problem that could not be worked out scientifically and comparatively economically. This is the age of preventive medicine.

The physician, knowing that a woman who is about to be

confined will be exposed to infection, could, after taking the usual aseptic precautions, place her on antipyrogenic and antitetanic milk, both before and after parturition. By so doing he could be reasonably certain that infection would not take place, even though his aseptic surgical technic was faulty. He would be even more certain that infection would not take place if he employed autotherapy of labor at the same time (Autotherapy in Gynecology and Obstetrics, *Medical Times*, May, 1914).

The following case illustrates my combined unmodified toxin and unmodified antitoxin method of treatment as a prophylactic to purulent infection. Let us assume, for the sake of bringing out the various phases of the discussion clearly, that an important man of the nation sustains a compound fracture of both bones of the leg with extensive lacerations. His leg and life must be saved if possible.

The writer believes that the following treatment would prevent infection almost every time. Either one of these alone would probably be effective, if the treatment is properly carried out: Beginning on the day of the accident, the patient is instructed to lick the wound thoroughly once daily or oftener. When this is done, the wound will heal without the evidences of infection. However, the patient may not be able to get the wound to his mouth, or he may object to this method of treatment on the ground that it is not appetizing or esthetic. Then in treating the patient autotherapeutically, the physician has the choice of two other methods of treatment. He may then either give the patient one half of the discharge from the wound daily by mouth without his knowledge, at both morning and evening dressings, or the discharge from the wound may be passed through a Berkefeld filter and the bacteria free filtrate injected hypodermically in proper doses daily, according to the technic given in my previous papers on the subject (*Practitioner*, April, 1914).

One half of the discharge is employed to immunize a goat or other lactating animal. On the day following the injection of the animal, the patient is given the goat's milk to drink when nourishment is required. By employing the discharge from both

morning and evening dressings, we should be certain of obtaining the micro-organisms as early as possible. The patient treated by this method would be acquiring active immunity to his infecting micro-organisms or autoimmunity, while the animal would be acquiring immunity to the micro-organisms pathogenically active in the patient at the same time. The patient would thus receive nourishment, and at the same time be taking antitoxins specific to all of his infecting micro-organisms.

If the wound is clean, this treatment will do no harm.

The regular preparation of a patient for an operation usually includes a diet of milk, both before and after the operation. There appears to be no reason why this milk should not be antipyrogenic milk, or milk containing substances antidotal to pus formation, or antagonistic to pyogenic infection that at times follow an operation.

We may be able to abort some operations by having the patient drink antipyrogenic milk, or milk from cows that have been immunized to the common pus producing micro-organisms. This is an exceedingly quick method of immunization. It lends itself readily to many conditions. In a few hours we may be immune to one of many infections. It is the least harmful method of immunization. In fact the patient need not know that he is taking a remedy or is being immunized. It taxes the system less than any other method, making it a boon to the very weak and enfeebled and the very young. It interferes with no established method of treatment, but offers an additional element of safety when the treatment is properly carried out; there is no anaphylaxis, no serum sickness, no tax on the heart. The advantages of my unmodified antitoxin method of treatment are many and will readily suggest themselves to the reader familiar with the subject of immunity.

It is well known that the very young have little power of reaction to toxins of pathogenic micro-organisms, and for this reason we should not attempt to produce active immunity by giving children medication that depends on reaction for a cure, but we should immunize the mother, if possible, when it becomes

necessary to immunize the nursing baby, for she is usually stronger and better able to withstand the strain incident to the development of antibodies that are the result of the reaction. When we immunize the mother to the micro-organisms pathogenically active in the child, there are developed in the mother *antibodies specific to all of the micro-organisms that infect the child, both causative and complicating*, hence the cure is quicker and more complete than it would be, had the mother or child been immunized in any other way. A diagnosis is often unnecessary as far as a cure is concerned when this method of treatment is employed. It is a simple office or bedside procedure.

The mother who does not nurse her baby robs it of the protective agencies against infection that belong to it by inheritance, that are bequeathed to it by Nature. Heretofore we have been immunizing against the more or less rare infections and have practically overlooked or neglected to immunize as a prophylactic against the most common pathogenic micro-organisms with which we have to deal, *i. e.*, the staphylococcus and streptococcus. There appears to be no good reason why we should not immunize against these as well, and many good sound reasons why we should immunize our patients against these at stated intervals. These cocci are the etiological factors or predisposing cause of more diseases than all of the other pathogenic micro-organisms put together. The advantages of immunizing against these micro-organisms are apparent when we understand that "they are found," as Mittman says, "in seventy cutaneous diseases." They also cause or complicate nearly every form of respiratory infection, as bronchitis, tonsillitis, sinus involvement, rhinitis, pharyngitis, laryngitis, pneumonia, pulmonary tuberculosis, also boils, abscesses, furuncles, rheumatism, appendicitis, cholecystitis, endometritis, salpingitis, etc., and there are many other diseases caused by them. There are many other diseases in which these micro-organisms act as complicating factors. Being immune to these cocci, it is probable that these infections would not be as severe as they would be had the patient not been immunized. If we include a very few other pathogenic micro-organisms, against which we

would periodically immunize our patients by giving them the unmodified antitoxins contained in milk from an animal immunized to these micro-organisms, we should probably be able to abort or keep our patients free from a vast number of the most common infections to which human flesh is heir and prolong human life. Some physicians may prefer actively to immunize their patients to these cocci. It then remains a matter of choice, but the writer prefers the passive immunization in the manner suggested.

During the summer months when colitides, dysenteries, etc., are common in nursing infants, if we immunized the mother as a prophylactic to infections common in the nursing infant, as the staphylococcic, streptococcic, colon bacillary, etc., it is probable that a great many summer complaints common in the young would not occur and the mother herself would be immune to many of the diseases mentioned above, and therefore would give a better quality and quantity of milk. The question arises: What is the distinctive field of medicine autolactotherapy and autotherapy are destined to occupy?

In all infectious diseases the improved condition of the body depends on the antitoxins. The antitoxin is developed in the living animal tissues in response to the action of a toxin on these tissues. The antitoxin is the result of the reaction of the tissues to these actions of the toxin. Not every person suffering with a toxic disease dies. The antitoxin is the substance the tissues produce to neutralize or antidote the action of toxins, and hence to cure the disease. The antitoxin that is developed in an animal immunized to the toxin that is pathogenically active in a given patient's body, is effective, if given to that patient. If there is more than one active toxin in a patient at the same time, immunity acquired by its use is of shorter duration.

The antitoxin that is previously produced in an animal, is quicker in its action than the antitoxin the patient would be compelled to produce by the action of his toxins on his body tissues. But the immunity acquired by the use of the heterogenous antitoxin is of shorter duration.

There is little or no systemic disturbance in the patient after

taking the antitoxins contained in the milk of an immune animal. There is always a local reaction after giving my unmodified toxin complex hypodermically, and if the dose is sufficiently large, a systemic reaction also follows its use. The range of effective doses of the unmodified toxin complex is so very great, however, that if it is given with a skilled appreciation of the nature of the infection and the response of the individual, the dose can usually be fairly accurately gauged and readily modified by experiment, so that there will be no appreciable systemic disturbance of any kind. There must always be some reaction, else no antitoxins will be developed. This reaction, however slight, might be a factor that would militate against its use in patients of very low vitality or reactive power. The antitoxin, therefore, may be given in preference to the toxin to those patients who have little power of reaction, namely, the very young and the very old, and to patients with little vitality, or slight reactive forces. This latter class of patients are often found among those suffering with chronic diseases. By this it is not to be inferred that the unmodified antitoxin therapy is not applicable to acute infectious diseases, for it appears that it is. The acute onset of some infectious diseases is so rapid, however, that we may not always be able to employ autolactotherapy as soon as desired, unless a lactating animal is always at hand ready for use. For this reason I believe it will be used more frequently in chronic diseases.

On the other hand, autotherapy is especially applicable in all acute localized infectious diseases, curing them or aborting them quickly, often within twenty-four hours, if given sufficiently early. It is often equally effective in chronic diseases. If acute diseases are aborted or cured, there will be no chronic diseases for autolactotherapy to cure. I believe that a judicious combination of both autotherapy and autolactotherapy constitutes the most rational treatment of localized and possibly non-localized infectious diseases.

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GIVE THE HORSE A SHOW—

Do you ever get to thinking of the way we used to go?
 We could drive as fast as blazes or we could travel slow;
 We could let the reins lie loosely or hold them fast and taut,
 The horse would prance or amble, on journey long or short.
 We could pull old Dobbin's foretop, and smooth his velvet nose,
 We could dress him up in harness when we wore our "Sunday
 clothes"—

And we could go a-riding along the country lanes,
 There wasn't any danger. Just hang on to your reins!
 There were no horns "a-tooting," or engines 'long our path,
 A-racing like a comet, with death for aftermath.
 I tell you it was better when we used to take the road
 With Bill, or Nell, or Dobbin—they didn't mind the load.
 We used to have some snow-storms; when the tracks were cleared
 for sport
 We'd hitch up Ned or Billy and the longest night seemed short.
 The old-time fun is ended—the times we used to know
 Just melted, gone like snow-drifts—
 They don't give the horse a show.

We travel now with engines—we make an awful noise—
 Everyone is speeding and everyone lacks poise;
 But I shall keep old Dobbin—think of days I used to know—
 And I sha'n't buy an Auto till they give the Horse a show.
 —(Written for *The Horse Lover* by Mattie E. Dodge-Gammons).

MASTITIS.*

BY CHAS. E. COTTON, MINNEAPOLIS, MINN.

When the secretary appealed to me for a contribution to the program of this meeting, I hesitated for the reason that it is impossible for a busy practitioner to offer anything original or new to the knowledge of his profession, except perhaps some unusual case report.

I have chosen the subject of mastitis because for years I have realized how little we know of this affection and its successful treatment. It is one of the most serious affections to the dairy industry and it is our duty to continue to endeavor to find some more effective method of treating, or combating it when it appears in a dairy herd.

I wish to state at this time that there is nothing original in this paper. It is simply a compilation obtained from my study of the disease and the most part of it is from the lectures I received from Dr. L. Klein of Philadelphia, last winter.

This disease is the result of an infection of the milk gland, due to the entrance of the micro-organisms which produce any ordinary wound infection. Investigators have found all of the types of organisms which are recognizable in wound infection, such as streptococci, staphylococci and colon bacilli.

The inflammation of the mammary glands may be divided into two groups—one in which the infection gains entrance into the cavity of the milk gland from the exterior through the teat canal or through some wound of the skin of teats or udder. The other in which the infection reaches the tissues of the gland through the medium of the blood stream, as in tuberculosis. The infection of the ray fungus is unknown as to origin, is hard to diagnose at first and is characterized by many tiny abscesses.

Klein divides mastitis into three types, depending upon the

* Reprinted from the proceedings of the Seventeenth Annual Meeting of the Minnesota State Veterinary Medical Association.

tissue or part of udder inflamed: interstitial, which affects the loose connective tissue binding together the tubules and extending up into the gland tissue; catarrhal, which affects the mucous membrane inside the teats and the large milk ducts; parenchymatous mastitis, which is an inflammation of the epithelial or gland tissue proper. I shall take up the subjects separately, first undertaking to cover the interstitial form, then the catarrhal and last the parenchymatous.

A simple non-infectious inflammation or mastitis may come from traumatism or injuries. As a result of the injury we have an infiltration of serum and leukocytes. The tissues become swollen, tender and hot. The more serious interstitial inflammation results from the entrance of bacteria into wounds or cracks in teats, producing a phlegmon or suppuration in neck of teat, viz., exudation of serum into the connective tissue, the leukocytes wander in and a few red blood cells, then the serum becomes blood stained or it may have the appearance of serum mixed with pus. This process produces no change in the milk, but if the inflammation extends into the gland tissue the milk is changed and takes on the appearance of whey, a turbid fluid with clots floating in it. The teat becomes swollen, hot, tender and œdematous and at the height of the inflammation the bodily temperature rises as high as 107 degrees F., the animal is depressed, dull and stops eating.

The treatment of these two forms will vary. The simple non-infectious interstitial mastitis is treated like any other simple inflammation. In the first twenty-four hours cold is necessary to keep down swelling and exudation. After this, warmth and moisture is indicated, viz., bathing with hot water and at night applying a Priessnitz dressing, made by applying a layer of moist cotton or oakum next to skin, over this a layer of woolen material, over this a layer of oiled paper or rubber and over this ordinary bandaging material to cover. You have here everything that poulticing or antiphlogistine will do. It is well also to rub affected part with some astringent solution; use white lotion diluted one-half, lead water and laudanum, or best of all, Bor-

row's solution (lead acetate 6 drams, alum 1 oz., spirits of camphor 2 oz., water Q. S. 1 pint). On the teats which you cannot cover with Priessnitz dressing, ordinary zinc ointment can be used. Where you cannot bathe with hot water you must depend on liniments—one being as good as another.

At the beginning of inflammation give a quick acting purgative, particularly one producing watery stools. This has the effect of draining fluid from the blood, which then takes up fluid from tissues to make up deficiency, thus depleting the inflamed tissue of the exudate.

We get good results from this line of treatment of laminitis in the horse by giving arecoline, but the cow does not react like the horse. If we give enough arecoline to a cow we may overstimulate contraction of all the four stomachs and intestines and have violent contraction of rumen, regurgitation of food which may enter trachea, and often death follows. Never use arecoline in any dose on a cow. Eserine $1\frac{1}{2}$ grains in connection with pilocarpine 3 grains gives good results in cow. Epsom salts 1 lb. and tartar emetic $1\frac{1}{2}$ drams, or gamboge $1\frac{1}{2}$ drams hurry the action of the salts and increase watery discharge. Diuretics, by increasing elimination of urine, increase the withdrawal of fluid from the blood. Acetate, citrate or bicarbonate of potash are preferable. Phytolacca has a diuretic action and is very efficient.

We can also improve conditions by stimulating circulation. Digitalis becomes macerated in the contents of the rumen and we get no results, but it can be given subcutaneously. Strong coffee (1 pint to each dose) or caffeine subcutaneously (15 to 30 grs.) is a good heart stimulant and diuretic in this condition. Caffeine is not soluble in water but if you add sodium salicylate or benzoate of soda, they render the caffeine soluble and it can thus be prepared for hypodermic use.

In the treatment of phlegmonous variety, bathe with hot water, followed with equal parts of spirits of camphor and alcohol, then put on Priessnitz dressing and keep the cotton moist with this mixture. Frequent milking is also necessary in both the simple, non-infectious mastitis and in phlegmonous form. We

can thus stimulate the flow of blood and milk secretion in all four quarters. Cow should be milked every two hours if possible and at least five times a day. This stimulates circulation and washes off the products of disease, like pus and mucus, bringing out the diseased secretions.

Also in treatment of the phlegmonous type when fever is high we get best results from administration of camphor and alcohol. The best way to administer is one part camphor to four or ten parts of sterile olive oil given subcutaneously in doses of one to two ounces. If you are in a position to repeat, give the smaller dose. Camphor can also be given by the mouth in considerable amounts without disturbing digestion.

After the acute symptoms have subsided in either type keep on bathing with hot water and then also massage the udder and use absorbing ointments containing 10 per cent. camphor or 10 per cent. camphor in linseed oil, or weak solution of iodine. Iodine $2\frac{1}{2}$ drams, potassium iodide 5 drams, lard oil 1 pint, makes a perfect solution and lard oil penetrates the skin better than other fat. This mixture is better than camphor and alcohol after the acute symptoms have subsided. If you cannot continue the hot water bathing and massaging, you can resort to this iodine liniment. When the inflammation is not very severe nearly all cases will recover under this treatment. When inflammation is very severe we may have abscess formation, particularly in the traumatic form, and the inflammation may assume a chronic course, then the connective tissue will multiply, the cells proliferate and this will increase the bulk of udder and produce "caking" or hardening or induration extending over a greater or less area. This must be treated the same as above (after the acute symptoms have subsided) and by the internal administration of potassium iodide, a dram twice a day. Abscesses should be brought to a head as soon as possible by the application of moist treatment and as soon as they fluctuate, open. If they rupture internally we must get out the exudate as best we can by massage and milking.

Catarrhal mastitis, with the infection extending up through

the teats to the large milk ducts, is caused by streptococci usually, sometimes by staphylococci and rarely by colon bacilli.

Staphylococci are common in milk from healthy udders and are considered saprophytic, but under some conditions due to cold, exposure or anything that depletes the animal, these may become pathologic and produce a mild catarrhal mastitis. When streptococci are found in milk and associated with a large number of leukocytes you can be positive that the milk comes from cows affected with catarrhal mastitis. In some cases these streptococci are very virulent to man. They are usually carried on the hands of the milker and can be transmitted through bedding, etc.

The bacteria are the primary cause of the disease but anything reducing the resistance of the udder will act as an accessory cause, such as cold (drafts or cold water to drink), retention of milk in the udder brought about by incomplete milking or allowing the milking to go over time, irritation of retained substances passing through the udder as puerperal mastitis from retention of placenta. The udder is principally a secretory organ but sometimes has an excretory function; if the bowels are diseased, as in simple indigestion, the waste products pass through the udder causing irritation of tissue. Some other causes may produce the disease by themselves. Usually bacteria are there but sometimes it is caused without their action.

Klein recalls an example in which a gentleman wanted his cattle as free from disease as possible and he started in the spring to have the backs and udders washed before each milking. This worked all right until late in November, when some cows showed symptoms of catarrhal mastitis. No streptococci were found, nor staphylococci, nor colon bacilli, but at the base of the teat the skin was slightly swollen, stiff and cracked in places. He assumed that the cold water and then the cold air had started the inflammation. This eczematous condition on the outside caused the inflammation inside. Washing the udder was stopped and after brushing it clean it was wiped with a damp cloth and anointed with vaseline. The inflammation disappeared.

Dr. Klein relates another experience in relation to the effect

of elimination of irritant substances through the udder. A dairy of many cows ran out of ensilage. They were cutting the first crop of alfalfa hay and immediately they began feeding it. It was a sudden change. The cows liked it and went at it strongly. The milk flow increased and they then received more alfalfa. The production of the herd was raised over a quart a day per cow. The cows became affected with intestinal catarrh, began to scour and the milk showed flakes. Catarrhal mastitis was discovered when they were examined. Alfalfa in excess, with disturbed digestion was the cause. Mixed hay was substituted and the trouble overcome. The relation between disease in other organs and the udder is thus shown.

Catarrhal mastitis does not show itself plainly. In the beginning you usually see no signs—no swelling or tenderness as in interstitial mastitis. In a few cases, however, there may be a little swelling in lower part with a little tenderness and heat. The first symptom is difficulty in getting out the milk, the membrane lining the teat canal becoming swollen and the lumen made narrower. Mucus is thrown out, later on pus which may block the canal.

Another symptom is deflection of stream or split stream. Ordinarily, on release of pressure on a normal teat the milk flow shuts off suddenly. In the catarrhal condition it does not, but a drop runs from it. You may have pus or dried milk at mouth of teat canal. If chronic, the inflammation passes through mucous membrane into connective tissue which proliferates, thickens and obstructs teat canal, which may contract and cause stricture. We can feel the thickness in form of cord extending through the teat. Thickened ends of the large milk ducts can be detected by palpation. We can sometimes feel a disc as large as half a dollar above base of teat. The hardness of udder begins at base of teat but it extends up into interstitial connective tissue until the whole quarter is involved. New connective tissue forms, contracts, causes pressure on gland tissue and destroys it, ruining the whole quarter. It may pass through connective tissue of all four quarters.

Retention cysts also may form by the swelling of mucous membrane and the blocking up of the teat canal, the pus or milk cannot get by, the wall of canal becomes distended forming a cyst varying in size from a pea to a walnut and differing from an abscess because it is not hot. While quite firm, if you press it hard you can usually empty it.

The treatment of catarrhal mastitis will depend on the form of the disease. With the infectious type (streptococci) we must be sure to isolate infected cows, disinfect the places they occupied and milk them last. Examine the remainder of herd looking for finer symptoms. If any show split or defective streams, drop of pus or mucus from teat or any thickening of teat, isolate those cows also, take sample of milk to examine for bacilli and leukocytes. The most important things are isolation and disinfection.

A few years ago practitioners thought it was necessary to simply inject antiseptic solutions but it does not work out. You cannot inject solutions higher than the cistern and infective material may be washed higher up into udder by your solution. Antiseptic solutions irritate the udder tissue and frequently increase the inflammation even when diluted to a point where their virtue is doubtful. Frequent milking is better than injecting disinfectants as it washes canal out and does not irritate. The germicidal power of milk which is feeble under normal conditions, is increased in mastitis.

Some drugs, like potassium iodide (45 grains twice a day), given by mouth, will be eliminated through the udder—iodine passes out in the milk. Boric acid by the mouth (2 to 6 drams) will be eliminated through the udder. Urotropin, a combination of formaldehyde and ammonia, can be bought under the chemical name, viz., hexamethylenamin, much cheaper, and can be given in one to two dram doses and this is separated in the body and formaldehyde is eliminated in the milk as well as in the urine. It should be given in combination with boric acid. It has not as yet been proven of how much value these drugs may be in the treatment of this disease but it has been proven that there is no

irritant effects to the udder following their administration and we should all give it a fair trial. The astringent ointments and the iodine in lard oil should be used as advised in the treatment of the interstitial form.

You may use the teat bistoury to cut the membrane in cases of stricture; but always use a sound afterward successively, in order to keep the teat dilated and prevent greater contraction from the connective tissue.

Ordinarily the veterinarian does not get the case in the catarrhal stage but when the membranes have become thickened and indurated.

Parenchymatous mastitis is the most common form with which the practitioner has to contend. It is an inflammation of the epithelial tissue (gland proper); the structure being similar to that of air cells of the lungs. The pathological alterations are similar to those of pneumonia. Congestion and inflammation pushes the cells through the membrane and there is an exudation of blood, serum and leukocytes and wandering connective tissue cells into the acini and ducts of the gland and an exfoliation of the epithelial cells lining the acini and ducts. There is also an inflammatory exudate into the interstitial and subcutaneous connective tissue which is often very pronounced.

A swelling in one quarter and sometimes in more than one is suddenly extensive and pronounced, it becomes hot and painful and the skin is reddened. The milk changes to the appearance of whey, with flakes and clots in it and later is much reduced in quantity and has the appearance of serum with clots of fibrin and casein. Temperature is high. Animal may be lame, may show symptoms of paralysis, may have secondary attack of indigestion or paresis of rumen.

If these exudates are not too excessive and can be removed and the epithelium is capable of regeneration, resolution occurs and the udder recovers. But if the exudates are very excessive so much epithelial tissue may be cast off that the udder cannot recuperate or completely recover.

If the exudates are not removed and the circulation not re-

stored to normal within a certain period, the inflammatory process in the interstitial tissue assumes a productive character, and the udder becomes indurated. Later this connective tissue contracts and produces atrophy of the gland tissue proper. If exudate does not get out it may occlude ducts and produce abscesses or it may interfere with circulation to a section of the inflamed area, when necrosis or gangrene may occur. Resolution or recovery then depends upon the prompt removal of the exudates. The exudate in the acini ducts and cistern can be drawn off by frequent milking, but that in the interstitial tissues must be reabsorbed. Give a quick purgative followed by heart stimulant—diuretics. Apply cold for twenty-four hours, then hot water bathing, Priessnitz dressing, astringent lotions and, where temperature is high, treat with camphor and alcohol. Give urotropin and boric acid. After the acute symptoms subside get rid of the remaining exudate by hot water, massaging and camphor ointment. The udder should never be massaged until the acute inflammation begins to subside.

Induration should be treated the same as described in interstitial mastitis, by potassium iodide internally, massage and iodine and potassium iodide in lard oil externally. Necrosis and abscesses must be treated surgically.

In regard to the treatment of mastitis by bacterial vaccines, the consensus of opinion by investigators to-day, and the results of their work show that we can expect little success from their use.

DR. SCHNEIDER APPOINTED MEMBER OF THE PENNSYLVANIA STATE BOARD OF VETERINARY MEDICAL EXAMINERS.—We learn with much pleasure, from the *Philadelphia Journal of Commerce* of January 2d, of the appointment by Governor Tener of Dr. F. H. Schneider, of Philadelphia, a member of the State Board of Examiners. As a general practitioner, Dr. Schneider has been very successful, and is held in high esteem by his clientele. His qualifications for the position to which Governor Tener has recently appointed him is fully appreciated by his friends in the profession all over the country, whose sentiments are expressed by the REVIEW in hearty approval and congratulations.

THE NEED OF MUNICIPAL MILK INSPECTION.

BY G. H. CONN, PRAIRIE DEPOT, OHIO.

Milk and meat as foods have received much more consideration at the hands of investigators as food products, because they are used as food by many more people than any of the other food products, and because milk is primarily a food for the young. Cows milk is especially much used in the cities as food for the babies, where many of them are bottle fed. It seems to me that the procurement of a wholesome and pure milk for the people, and one that is cheap and nutritious, for the people of our country, and especially for the babies, would be a work in which any one should feel proud to be engaged and should receive more consideration at the hands of veterinarians than it does. Too many of us veterinarians do not pay any attention to matters of this kind simply because our municipalities do not make provision for such inspection. Milk not only carries disease to the human family, but it decomposes very rapidly; and, besides, there are many people who are so unscrupulous as to adulterate it in various ways. By careful observations and tests, methods have been perfected by which these frauds may be detected.

It was formerly thought that anything to be of any value concerning the public health must come from the regular medical practitioner, but the recent advances in comparative pathology and therapeutics have taught the people that the individual who has had special training along such lines is the individual that is best prepared to handle the situation, and for this reason the veterinarian is better fitted to handle the inspection of milk than any other because he has had special training in the diseases of the domestic animals and diseased conditions that may result from the consumption of some of their food products.

In the production of milk for human consumption, the very

first act is a violation of nature's law. Nature intended that the young of those animals who nourished their young with milk should draw the milk directly from the udder. Milk in being drawn by hand or any other artificial means for the use of those who may use it for food is sure to undergo more or less contamination; the dirt and bacteria on the teats, the loose hairs on the body, the dandruff from the skin, the particles of dust in the air from dusty fodders and hay, and several others all contribute to contaminate milk when it is artificially drawn for human consumption. The time elapsing between the drawing of milk and its consumption and the rapidity with which it develops bacteria make it necessary to use the utmost precaution in handling it. When calves are fed on milk from the cow drawn artificially, the contamination, decomposition and irritant properties that develop oftentimes prove dangerous and many times fatal because of the gastric-intestinal conditions which they cause. Infants often suffer with this same condition, and in the cities where bottle-fed babies are common, from 10 to 20 per cent. of the infant funerals are from this cause alone. In one of the large cities of this State where they have had competent and rigid municipal milk inspection, during the first three years infant funerals were reduced 33 $\frac{1}{3}$ per cent., some record to be proud of, I should think.

The stalls where cows are kept should be cleaned some time before milking, so that the cows may be well bedded down and the dust have time to settle and the odors to banish; the attendant who does the milking should not smell of the odors of other farm animals with which he may have been working and should wear clean clothing and should have clean hands. It is a common practice with many milkers to go to milk without washing and then wet the hands with the milk during the milking, this is very unsanitary and should be discouraged. The cows should be cleaned before milking and the udder wiped with a damp cloth; the opening in the top of the pail should be as small as possible to permit milking, as this will keep much dirt from getting into the milk; the pails and vessels in which milk is handled should

be so constructed that the milk could not collect around seams and thus be a breeding place for bacteria that are usually associated with milk.

It is the large dairies that furnish milk for the people in the large cities, and it is in these large dairies that the cows are forced for a large milk production, and for this reason they are not able to withstand disease as well as they would under more favorable conditions, and therefore the milk from such cows and the cows themselves should be under competent inspection.

Cows that have diseased udders are sure to give off some of the infection when the milk is drawn; also, in diseases where the other eliminating channels are not working properly, infection and poisonous products are sometimes given off with the milk. I feel that many of the diseases of infants in particular are due to some infection in the milk, especially where they are fed on cows milk, due to streptococci and other virulent strains of infection and their poisonous products.

The reason milk is not recognized as the cause of more of the ailments of children, than it is, is due to the fact that there are too many doctors who do not make enough effort to find the cause of many of these conditions, being very willing to call them summer complaint, indigestions, etc.

It is a recognized fact by a large number of the best authorities on medicine at the present time that bovine tuberculosis may be, and in fact is, transmitted to human beings through the milk of animals infected with this disease; this affects children under two years of age principally, although older children and occasionally adults contract the disease in this way. Dr. Park, an eminent physician of New York City, is authority for the statement that the bovine type of tuberculosis is the cause of the death of two to three hundred of the infants in that city each year; a mighty hard blow to the mothers of New York to bear for a condition that could be remedied.

Great care should be taken in the production of milk, so that the attendants who care for the cattle do not infect the milk with various diseases with which they may be associated, or

be the virus carriers for them. Many times people have been infected with typhoid fever, scarlet fever, diphtheria, etc., simply through the milk that they have consumed.

The water in which the utensils are cleaned should be pure and free from any diseases that might render the milk dangerous to public health.

The time elapsing between the drawing of milk and its being consumed by our city cousins in many instances is several hours, and this makes it all the more necessary to have a system of inspection that will compel the producer to make the necessary provision for the proper delivery of his product to the consumer.

There are several methods used by those dealers who have no regard for fair dealing in adulterating their products, and where inspection is maintained these frauds can be detected and the person punished for so doing. These consist chiefly of artificial preservatives and flavors; and watering is quite a common practice in some places in this country.

Many of the conditions mentioned in this article could and would be greatly benefited by competent municipal inspection, and several of them could be eradicated, and by so doing would be a great protection to the people of the municipality.

CANADIAN VETERINARIANS MEET IN MONTREAL: The first congress of the veterinarians of the Province of Quebec was held January 20 and 21 at *L'Ecole de Médecine et de Science Comparée, Lvaal*, 381 De Montigny street, East, Montreal, Canada. The program includes our own Joly of Maine, and Higgins and Torrance, who, while Canadians, are of us through the A. V. M. A. (just as Dr. Etienne, secretary of the congress, is related to the veterinarians of the States); and embraces amongst its subjects, *Production of Vaccines, Toxins, Anti-Toxins, Biological Treatment of Equine Influenza* and kindred subjects. *A New Theory of the Etiology of Shoe Boil* is also numbered amongst the papers. The clinic, held at Chamlet's Riding Academy, Montreal, as well as the discussion of the papers, provided solely for the recognized members of the profession and their friends; admission could only be obtained by cards issued by the executive committee.

WHAT IS IN STORE FOR US.

By L. C. KIGIN, DEPUTY STATE VETERINARIAN, LINCOLN, NEBRASKA.

Spending last evening in the lobby of the hotel, mingling, meeting, and shaking hands with the different legislators, who had just congregated, the thought came to me, as I gazed over that vast body of lawmakers, "What consideration will those men give to the advancement of the veterinary profession in this state?" I wondered if they would entirely overlook this important branch of science and go back home, some time in April, without passing at least one law that would advance our standard. I, for one, cannot believe that the Nebraska legislature will treat us in this manner.

If I could only deliver the message, as I see it, we would have many good laws placed upon our statutes, this session. In my opinion, one of the most needed laws of this state, as well as every other state in the Union, is to create a Board, giving this Board the power to revoke the licenses of practicing veterinarians who disregard not only the ethics of our profession, but willingly and knowingly violate every moral law and principle, endowed in man. Allowing such imposters to practice, is what has poisoned and killed our advancement. I believe that I am in a position to know what I am talking about, when I make this assertion.

I, as well as every other State Veterinarian, receive the complaints from the poor, innocent client, who has been mistreated. Many times these complaints have been so numerous and serious that I wish I had chosen another profession. I want to say, right here, that I am not making a charge against the veterinarians, as a whole, in this state, as I know the veterinarians of this state, as a whole, are as clean and honorable and scientific a body of men as can be found in any other profession, whether it be medicine, law, or what not. But we have a few wayward sons, as every other state has.

A standard has been set in the Nebraska Veterinary Medical Department that every veterinarian must work in accordance with, or his services will be severed, exclusively, upon findings of his wrongdoing.

Going back to what the legislators can do for us, I wish to state that I expect to go before that assembled body, if permission is granted, and give them the privilege of gazing upon 3,000 feet of motion pictures, that I have taken over this state, showing tuberculosis among the dairy cattle, from every phase and angle. At the same time they are viewing these pictures, which they have never had an opportunity to see before, I expect to deliver to them an address of explanation, and make an appeal for laws to be passed, that will assist and enable us to eliminate such existing conditions, in this state. Their only means of assistance is to give us the law previously mentioned.

I believe that the most serious problem that faces America to-day, is the elimination of tuberculosis among our dairy herds. My experience, in this office, has led me to believe, and to make this statement. Of course, many others have had much more experience than I. In reading over Government reports, I feel that they have the same fear, that if this matter of eradicating tuberculosis is not taken in hand, in an educational way, that this disease will destroy millions of dollars worth of valuable live stock in this country in the next few years. In order to bring about good results, I feel that a good quarantine law is of extreme importance, not merely to quarantine diseased stock that has been bred and raised in this, or any other state, but to quarantine an interstate shipment, when, in the opinion of the State Veterinarian, he deems that additional tests should be made, in order to feel safe that he is not allowing diseased animals to creep in, that will in time, infect many of our healthy animals. I believe, furthermore, in such a quarantine law, it should be specifically stated that all expense of such tests should be borne by the owner, and in this way, it would make them a little more cautious and careful in bringing stock from one state to another. If a cow, or cows, are found to be affected with tuberculosis,

they should be shipped, not later than 15 days, to where they will be killed under government supervision. It might be that some states have a law, at the present time, on their statutes of this kind, but I am sorry to admit that Nebraska has not. It should be the aim of every state to have such a law passed in the next meeting of their session of legislature.

Too many veterinarians, in my opinion, have assembled around these bodies of legislators and asked them to support a practice act. I believe that they have begun at the wrong end. The reason is, that the legislators will not recognize the value of the veterinary profession, as long as we have veterinarians in our rank and file who continue to do the disreputable work that has been done in the past.

Therefore, I still contend that a Board should be created, which would make an investigation of a veterinarian whom charges have been made against, and, if they find that this man is guilty, his license should be revoked, and I am very sure that not many more assembled bodies of legislators will convene, in the United States, until our value will be recognized and they will turn a listening ear to our call, and we will stand in rank and file, where we belong and where we have been striving to reach.

AMONG the interesting features in the last number of *The Inspector* that reached us, were cuts of National Secretary S. J. Walkley; of Hon. C. O. Lobeck, Congressman, of Nebraska, Father of the Lobeck Bill, H. R. 9292; Hon. J. Hamlin Lewis, Senator, of Illinois; Hon. Asbury F. Lever, Congressman, of South Carolina; Hon. Thomas P. Gore, Senator, of Oklahoma; Hon. Chas. F. Booher, Congressman, of Missouri, and last, but by no means of least importance, Dr. J. F. Gibson, President, National Association of B. A. I. Employees.

REVIEW WORTH FOUR TIMES THE PRICE—Dr. C. W. Fogle, Leipsic, Ohio, writes, in renewing his subscription: "Enclosed find check for next year's subscription. I could not do without it for four times the price."

SHALL WE ADOPT THE USE OF HOG CHOLERA SERUM AND VIRUS AS AN IMMUNIZING AND CURATIVE AGENT.

By S. J. MARQUARDT, D.V.M., BARNESVILLE, OHIO.

The time has passed when the practicing veterinarians in the rural districts can say that "I, for one, will not have anything to do with hog cholera," and in some instances referring the cases to the State authorities to do the work. But the time has arrived when each and every veterinarian must take a stand for or against its use.

The writer, for one, has never been wholly convinced of the advisability of the indiscriminate use of the serum and virus in the control of hog cholera for the following reasons: First,—Because of the danger of spreading the disease; as we are all acquainted with the fact that hog cholera is rapidly spreading into localities where its presence has not been heard of for years, and we know the serum has been used in those localities by the simultaneous method, and still the disease spreads. There has always lurked in my mind doubt that the use indiscriminately in the hands of the average veterinarian was not a safe way to deal with the dreaded disease. Mistaken diagnosis has much to do with the spread of the disease, and here is where the use of the simultaneous method, where there is any doubt whatever existing, as anyone can readily see that there is great danger of infecting entirely free premises.

Some may say that there is no danger, but does any veterinarian report 100 per cent. cures in any method used. Some States report 48 per cent. of all hogs treated saved, some a still higher percentage. None of us wholly discredits the value of potent hog cholera serum. Many hogs have undoubtedly been saved, but why the spreading of the disease?

The writer has never seen any literature relating to the possibility of immune sows or gilts being carriers of the disease in

their bowels or skin, and excreting them after farrowing time, and thus inoculating their progeny. The writer has at present under his observation a similar case which is untraceable to any other cause than the above mentioned one. The sows remain comparatively healthy and the pigs, at five to eight weeks old, contract the disease. The sows were shipped into this locality from a section of the State where hog cholera is known to have existed. This point, it seems to me, is worth investigation, and a hearty co-operation of all the veterinarians throughout the United States.

The serum manufacturers all over the country would, no doubt, welcome the day when all hogs were immunized by their products, but to my observation this procedure seems futile when the end in view is the eradication of the disease. Can we not dispense with the virus, as it is dangerous to use even under the most favorable circumstances. Each and every veterinarian should be a public benefactor and a sort of guardian over the livestock in his community, and not help to perpetuate dangerous schemes and devices at our hands to replenish our purses.

[NOTE.]—Dr. Marquardt's letter of transmittal suggests such an earnest desire for an honest and unbiased expression from his brother practitioners that we append it as a footnote to the article.—[Ed.]

Barnesville, Ohio, January 12, 1915.

THE AMERICAN VETERINARY REVIEW, New York City, N. Y.:

DEAR SIRs—Enclosed you will find a contribution to your valuable journal, which periodical I value very highly. I have been a constant reader of same for ten years, and could not be induced to dispense with it. This article, which I am contributing, is probably too briefly dealt with, but my object is to get this subject before the readers of the AMERICAN VETERINARY REVIEW, with the hope that the profession will arrive at some definite working basis.

With best wishes, I am,

Very respectfully,

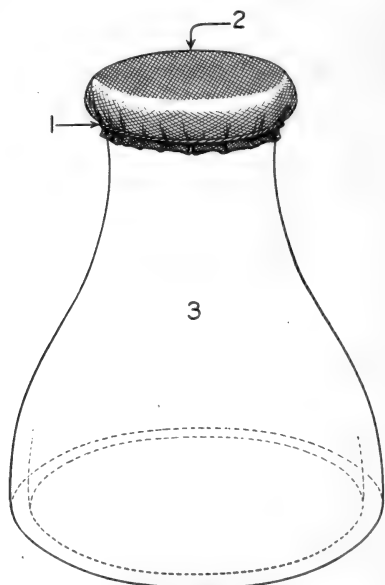
S. J. MARQUARDT, D.V.M.

NEW DATES OF IOWA STATE ASSOCIATION MEETING: The Iowa Veterinary Association, scheduled to meet at Cedar Rapids, December 9, 10 and 11, 1914, but postponed, has arranged to hold its meeting February 9, 10 and 11, and carry out the original program. It is hoped that *all* will be able to attend at that time.

AN IMPROVISED TRANSPARENT ETHER CONE FOR SMALL ANIMALS.

BY CRITTENDEN ROSS, D.V.M., NEW YORK, N. Y.

No doubt many in the veterinary profession have at some time desired to anæsthetize some small animal, and because they had failed to secure a cone or some other apparatus for the purpose are found administering it merely by holding cotton, saturated with the desired anæsthetic, to the nose. The latter



1. String holding gauze on top.
2. Gauze.
3. Upper 4 inches of ordinary pint milk bottle.

is better than no anæsthetic, but in my opinion requires more time and more of the drug; all of which is unnecessary, as will be shown later.

Now for those who do not have satisfactory apparatus for the administration of anæsthetics to small animals, the writer submits a cut to illustrate a very convenient cone. This cone is made from an ordinary pint milk bottle by cutting it about

four inches from the top; this cutting may be done in several ways, such as with a glass cutter, or by burning a string (saturated with alcohol or oil), tied about the bottle, then dashing cold water over it, or by the use of a file to cut a groove around the bottle and then break it. There are many other methods and each party may choose his own plan. After the bottle has been cut or broken the edges should be smoothed with a file, then a strip of gauze, two to four layers in thickness, placed over the mouth and tied there with a string as shown in the illustration.

Now the cone is ready for use and a pledget of cotton containing the desired anæsthetic is placed in the cone near the gauze, and then the cone is placed over the patient's nose and face (a quart bottle may be used for larger dogs), after the patient is once asleep the cotton may be removed and the anæsthetic dropped on the gauze as needed.

The feature in this cone which gives it an advantage over others, and which suggested the milk bottle to the writer, is its transparency, making it possible for the anæsthetizer to watch the eye of the patient during the entire operation, it is also inexpensive, and practically indestructible.

THE PENNSYLVANIA STATE VETERINARY MEDICAL ASSOCIATION will hold its thirty-second annual meeting on March 2d and 3d, 1915, at the Veterinary School, University of Pennsylvania, 39th street and Woodland avenue, Philadelphia. Secretary Reichel, in behalf of the association, extends the usual cordial invitation to all interested veterinarians.

THE number of colts raised annually in the United States is about 1,700,000, and the demand not only exceeds the supply, but prices have been soaring for the past ten years. Such being the case, it is no exaggeration to state that, in spite of all the breeding which may be accomplished during the next two or three years, the supply will not even reach, to say nothing about meeting, the demand.—(*The Horse Lover.*)

CANNOT WELL DO BUSINESS WITHOUT THE REVIEW—Dr. H. W. Skerritt, Utica, N. Y., writes in renewing his subscription to the REVIEW: "Enclosed find check for the REVIEW; we cannot well do business without it."

REPORTS OF CASES.

REPORT OF SOME CASES MET DURING THE PAST YEAR.*

By W. C. BROMAGHIN.

During the period from about June 1, 1913, to the beginning of this year (1914), I had no less than twenty cases, all of a similar nature, of which I was unable to arrive at any definite conclusion in regard to diagnosis, and will endeavor to describe the condition in a few cases.

No. 1. About May 25, 1913, a two-year-old-grade percheron mare colt a month at pasture. Owner called, complaining that colt acted very strangely. Upon arriving, found animal unable to walk, due to muscular inco-ordination of extremities which was quite complete. Animal could rise with assistance, but could not walk, due to the inco-ordinate nervous impulses which were given off to the muscles of locomotion. I looked for luxation of the ospine. I tested the sensory impulses. I looked for abnormal attitudes. When animal was lying down, everything appeared normal. I tried to obtain history which would sustain the impression that the condition was produced by tromoter influences, but failed.

All the body functions were normal from a clinical observation. I finally decided the condition was of central origin, and so had to fall back on our friends in need, alteratives and reabsorbitants for therapeutic measures, and after placing in slings and formulating a diet I ordered her given one dr. of K. I. daily for two days, then two dr. daily. This animal remained in this condition for four weeks, appetite during this period remained good, and even improved in flesh. No atrophies presented themselves. I finally decided the case hopeless and ordered destruction.

No. 2. About May 15, 1913, a yearling standard bred colt; second week at pasture, with the same identical condition as previously mentioned, was brought to the barn on a stoneboat and placed in a large, roomy box stall with same K. I. treatment. This

* Reprinted from the proceedings of the Seventeenth Annual Meeting of the Minnesota State Veterinary Medical Association.

colt made a complete recovery in four weeks and was turned out again, after which he developed the same trouble. He was brought in again and remained in this box stall four months, made a partial recovery. He is now at pasture with a decided fault in locomotion.

No. 3. Bay, two-year-old, with the same condition, was placed in a large, roomy box stall with same K. I. treatment, with a good recovery in six weeks, and was then turned out to pasture again.

No. 4. December, 1913. Grade percheron mare, 7 years old, had been hauling cord wood every day, was found in this condition when owner was about to hitch it to a load in the morning. I made a careful investigation in regard to feed and found that the corn which the owner was feeding was moldy, and told him to discontinue feeding this soiled food and placed the mare in a padded single stall and ordered K. I. This animal made a good recovery in three weeks with the exception of a slight drooping of one ear and a tipping attitude of the head toward that side. She remained in perfect physical condition and was afterwards put to work and has been in active service ever since, but still has that peculiar tipping of the head and drooping of one ear on the same side. I had several other cases of the same condition, the most of which terminated unfavorably after several weeks of treatment and a few of which were never able to rise from the onset. I have had no cases of the same nature this season so far.

MILK FEVER.

Being located in a section which favors the dairy industry, I am naturally called upon to treat a large number of milk fever cases, with which I have been quite successful with the exception of a few cases, some, at least, of which I can account for their unfavorable termination. The secret in the favorable termination of the milk fever case lies, I believe, in its manipulation by the owner before the veterinarian arrives. How many of these cases, after lying in a prostrate condition in some instances for several hours, and upon being discovered by the owner are propped up on their sternum, are turned over only to die of suffocation about the time, or soon after, the veterinarian arrives. As I positively know from experience that they will die if they are turned over. I then resolved to find a plausible explanation for this unpleasant discovery, by posting a few. In nearly every case I found the lower lung in an extreme hyperstatic condition, a passive congestion to the extent that it would no longer float on water. We all

know that this condition must exist in the animal which has been lying prostrate for several hours, but we do not stop to think what is liable to happen if we turn her over. Knowledge obtained by experience is seldom forgotten.

NERVING TO RELIEVE A CHRONIC HYPERSENSITIVE CONDITION OF THE SKIN OR CHRONIC DERMATITIS OF THE REGION OF THE PASTER. N.

With me the treatment of a case of chronic dermatitis in the region of the pastern is very unsatisfactory, especially of those cases of enormously thickened and even hypertrophied derma of the region. The duration of a routine treatment which would effect a relief in these cases is so long that the owner becomes discouraged and eventually no relief is the outcome. To the average practitioner this may seem rather radical measures to adopt for the relief of this condition, but it will relieve it and I have patients which have been in active service for two years without any unpleasant sequelae as yet. I reset a small portion of the plantar nerves just above the pastern which is the high plantar operation. I do not wish to commit myself or make myself conspicuous by recording my failures or successes, however, a few practical ideas gained by actual experience may be of some value to the average practitioner, while scientific theoretical tabulation is sometimes of questionable value, when applied in practice.

SOME INTERESTING CASES IN MY PRACTICE.*

By OTTO FAUST, D.V.S., Poughkeepsie, N. Y.

"Careful observation makes a skillful practitioner, but his skill dies with him. By recording his observations, he adds to the knowledge of his profession, and assists by his facts in building up the solid edifice of pathological science."

Case No. 1. On August 3, 1913, I was called to see a filly owned by O. Mills of Staatsburgh, N. Y., with the following history: Ever since it was a small colt, there was noticed a periodical weeping of the left eye; no attention was paid to this condition until July, when the filly was taken up to break, when they found that pus was being discharged from its weak eye, I could find nothing but an inflammatory condition of the conjunctiva, for which I prescribed hot fomentation and applications of a solution of boric acid.

*Read before the Central New York Veterinary Medical Association at Syracuse, November, 1914.

About three weeks later, I received word that the filly had seemed to improve, but was now as bad as ever. I advised sending her to the hospital which they did.

After receiving the colt at the hospital, a more rigid examination was conducted; said examination disclosing the fact that the lower opening of the lacrimal duct was absent. Then I concluded that this must be the source of trouble, and decided to operate.

Operation: On account of the field of operation I used chloral hydrate one-half hour before placing her on the table; after being properly secured on the table and the head and face thoroughly washed, I passed a special long catheter into the upper opening of the duct as far down as possible.

I then tried to trace the end of the catheter through the nostril, failing in this I painted the space between the pre-maxillary and nasal bones with iodine and made an incision 2 inches long, parallel with the nasal cavity through the skin and false nostril to the nasal cavity, one and one-half inches above the wing of the nostril.

I could then feel the catheter in the canal, and with a curved bistoury I cut down on it. Pushing the catheter through this opening I passed it through the natural opening of the nose, tying both ends of the catheter together. After painting the external incision with iodine, three sutures were placed in the skin.

Removed colt from the table and placed in stall, tying both ways so that the catheter could not be disturbed.

Every day the catheter was moved up and down, the inflammation subsided from the eye and discharge ceased. After two weeks I fastened a silver wire to the stiletto of the catheter and carefully pulled the wire into the catheter, then removed the catheter, leaving the silver wire in the canal for two weeks longer; after which it was removed, and the colt discharged as well.

I have seen the colt this summer and there has been no discharge since her return home.

Case No. 2. On May 27, 1914, a yearling filly owned by the Hudson River Stock Farm, while being driven on the track, was suddenly startled by some hay thrown from a mow on the side of the track. She plunged forward and fell with her hind legs straight back, so that the median line of the abdomen was on the ground. After unhitching her from the sulky she struggled to her feet and was led to the stable about a quarter of a mile away.

When I arrived at the farm, I found her down in the box stall, body wet with perspiration, temperature 102, pulse 50, respiration 28. With assistance we raised her to her feet, but she only remained standing about five minutes, when she again lay down. I could find no injury except around the upper end of the left scapula, which seemed to be sensitive. I ordered her body wrapped in hot blankets to be repeated every hour through the night.

The next morning she was unable to rise with assistance, urine passed involuntarily while she was down, fæces had to be removed by hand, and she showed great pain on being moved. From these symptoms I diagnosed her case as a fracture of the spine and advised her destruction, which was delayed until the next day on account of the owner being out of town; in the meantime she was made as comfortable as possible.

The next day she could not raise her head, paraplegia being complete; I chloroformed her.

Post-mortem Report: I removed the left foreleg from the body and started from the last rib, sawing them about four inches from the spine, when I reached the ninth rib I noticed that it was not as firm as it should be and completed the fracture by sawing, the remainder of the ribs except the last being loose, I was very careful so as not to displace them. On the inner side of the ribs I found a large hæmorrhagic surface close to the spine corresponding to the injured ribs. I then examined all the organs but found nothing abnormal. I then turned the carcass over, removing the right foreleg, and sawing all the ribs about four inches from the spine found all of them whole, then sawed the spine across at the first and the tenth ribs. Carefully examining the eighth left rib, I found an incomplete diagonal fracture between the articulation and the tuberosity, the 7th, 6th, 5th, 4th, 3d and 2d ribs were in the same condition. I then made a longitudinal section of the spine and found a fracture of fifth dorsal vertebrae with small blood clots in the canal.

Now the question which I have not settled in my mind is, whether the lesions resulted from muscular contraction or from the concussion of the fall on the abdomen?

Case No. 3: On January 3, 1913, I was called to A. Brown's place, at Hyde Park, to see a yearling thoroughbred Percheron filly with the following history. Shortly after turning out filly for exercise, she was seen laying down and rolling; she was then led to her box stall, where she again showed pain. Simple remedies were given for six hours, when I was sent for.

Symptoms: Lying down with occasional rolling, told to get up she jumped to her feet and remained quiet long enough for me to take her temperature, which was 101, pulse, 56; respirations, 26; when she again, looking around at her flank, laid down. At this time there was no bloating, but her abdomen seemed full. I then made a rectal examination and found a constriction about twenty inches from the external opening, through which I could not pass my finger; taking a small catheter I was able to pass it without any trouble. I then tried to dilate the opening, but could not. Taking a gallon bag syringe filled with warm water with one ounce of hyoscyamus tincture, and connecting the hose of the syringe with the small catheter which was passed through the constriction, allowed the solution to enter the bowels beyond the constriction, which I ordered repeated every two hours; also gave tincture of dioscorea and tincture of hyoscyamus alternately, 30 drops every half hour.

The following day I found the filly worse, temperature, 103; pulse, 70; respirations hurried; standing backed in the corner of the box. The owner having been notified the night before of the fatal condition of the filly, I again wired him for permission to destroy her. Not receiving an answer from the owner, he being out of the city, the same treatment was continued until four a. m., when she died. The morning of the fifth I posted her.

Post mortem: Realizing that my trouble was located in the floating colon close up to the rectum, I placed the colt on her back, spreading both hind legs as much as possible, cutting from the xiphoid appendage, following the borders of the false ribs on both sides to the flank, curving inward close to the hind legs, to the pelvis, exposing the internal viscera.

Standing on the left side of the carcass and raising the pelvic flexure of the large colon, I exposed the floating colon which I found intensely inflamed from the rectum about four feet forward.

In this intensely inflamed area I saw a band about one inch wide circling the colon; lifting the colon up I found on the inner side what looked like a tumor. By pushing this tumor back through the ruptured mesentery, I discovered that the tumor was the left ovary which was hypertrophied and peduncled, about the size of a billiard ball. The opposite ovary was normal and in its proper position.

Case No. 4: On September 25, 1914, I was called to see a horse owned in Poughkeepsie that had picked up a nail while at work on the 21st, the nail penetrating the right hind foot near the

point of the frog. I removed the shoe and trimmed the foot as much as possible, getting a quantity of pus, and ordered the foot soaked in a hot creolin solution, to be followed by a flax-seed poultice. I injected 3,000 units of antitetanic serum.

On the 26th I again saw the patient, washing the foot with a warm creolin solution. After trimming the foot again, I dressed it with cotton and creolin, ordering the dressing repeated morning and night.

On September 28th the owner drove the horse to the hospital, saying he acted stiff and did not eat well. He was unhitched and brought into the hospital and a diagnosis of tetanus made.

Treatment: September 28th at 4 p. m. injected 24,000 units of antitetanic serum and placed in a dark box stall, patient could not eat or drink.

September 29th at 8 a. m. patient unimproved, injected 24,000 units, and repeated 1,500 units of serum at 6 p. m. The rectum was cleared of feces by hand and injected one-half gallon of a mixture of milk, eggs and whiskey.

September 30th at 8 a. m. no improvement in patient's condition, injected 18,000 units, and repeated the 18,000 units of serum at 6 p. m.

October 1st at 8 a. m. patient was more excitable. I injected 24,000 units, and repeated the dose of 24,000 units at 6 p. m., continuing the rectal feeding.

October 2d as I only had 12,000 units left I injected 6,000 units at 8 a. m., and repeated the dose at 6 p. m.

October 3d patient seemed improved, being able to drink a pail of oat-flake gruel. Rectal injections were discontinued, as it seemed to excite him. I injected 9,000 units at 8 a. m., and 9,000 units at 6 p. m.

October 4th patient able to drink and eat a little bran mash with difficulty. I injected 6,000 units at 8 a. m., and repeated the dose, 6,000 units at 6 p. m.

October 5th patient about the same, I injected 6,000 units at 8 a. m., and repeated the dose at 6 p. m.

October 6th patient seemed not so well, refusing to look at feed and did not care to drink. I injected 9,000 units at 8 a. m. and repeated the dose, 9,000 units at 6 p. m.

October 7th patient able to drink and nibble at some hay; I injected 9,000 units at 8 a. m., and repeated the dose at 6 p. m.

October 8th, the muscles of ears and neck relaxing a little, injected 9,000 units at 8 a. m., and 9,000 units at 6 p. m.

October 9th patient able to eat about 2 quarts of bran mash

and drink considerable water. I injected 9,000 units at 8 a. m., and 9,000 units again at 6 p. m.

October 10th the horse would move about the stall more freely; I injected 9,000 units at 8 a. m., and 9,000 units again at 6 p. m.

October 11th patient about the same; injected 9,000 units at 8 a. m., and 9,000 units again at 6 p. m.

October 12th the muscles of neck relaxing a great deal, so much so that he could almost reach the floor. Injected 6,000 units at 8 a. m., and 6,000 units at 6 p. m.

October 13th, patient improving rapidly, eating and drinking very well. I injected 6,000 units at 8 a. m., and 6,000 units at 6 p. m.

October 14 patient able to eat hay from the floor and move around the stall very well. I injected 3,000 units at 8 a. m.

October 15 patient on the road to recovery; injected 3,000 units at 8 a. m.

October 16th the muscles of the body somewhat stiff, but otherwise the patient was gaining rapidly. I injected 3,000 units at 8 a. m., which was the last injection.

October 27 patient discharged from the hospital and owner advised to turn him out in a paddock through the day. The horse was allowed to run out until November 8th; he was shod on November 9th and was put to work.

Total amount of serum used, 342,000 units, at a cost of \$171.

IMPACTION OF THE CAECUM—RUPTURE—DEATH.

By ROBERT W. ELLIS and CRITTENDEN ROSS, New York, N. Y.

Dr. Ellis: On November 16, 1914, an aged gray mare, of the ordinary work-horse type, weighing about 1,200 to 1,250 pounds and measuring about fifteen and a half hands in height, was brought to the office door by her owner, with the history that she had not eaten for about eight days, and the request that I "fix her teeth." I examined her mouth and found a few spiculae here and there, but did not consider that her teeth were sufficiently bad to be the cause of her not eating for that length of time; although I thought they might be the contributory cause, through imperfect mastication of food, giving rise to indigestion. I explained my impressions to the owner, and, being late in the evening, suggested going to his stable in the morning to float the mare's teeth, and if I found she carried no fever, would physic

her, and follow that up with a tonic. He fell in with my plan readily, which was followed out the following morning, November 17. The mare's temperature registered 100.5 degrees F., and accordingly, after the teeth had been leveled by the cutting down of the projecting points, a physic ball was administered and a bottle of tonic medicine left to be given in two-ounce doses three times a day *after* the physic ball had completed its work. That was the last I saw of the mare. On November 20 (three days later) a hurry call came into the office from the owner of the mare, to which Dr. Ross responded, and he will tell the rest of the story.

Dr. Ross: In response to the above call I went to the stable and finding the same locked waited outside until the owner returned, during that period of time I heard no noise inside and began to feel that it was a false call and started to return to the office, but met the owner, and upon examining the animal found her with flanks tucked up, nostrils dilated, respirations deep, and pulse very rapid, when brought from the stall she showed a very uncertain gait, reeling from side to side like a man under the influence of intoxicating liquor; her head was held very low, and because of her actions, I considered it dangerous to attempt a rectal exploration, and being asked by the owner, "What do you think of her?" I made an immediate reply that death was the only thing left for her, and to relieve her pain I administered some cannabis, but before one-half hour she had breathed her last.

Post mortem: Upon opening the abdomen a large quantity of blood-colored fluid escaped with some food material in it. As I began the removal of the bowels I found the cæcum distended and the contents very firm, at the base of said organ were two ruptures separated by four inches of the wall.

The large and small colon had a semi-fluid content. While the small intestine was practically empty the stomach contained a small quantity of water, the peritoneum appeared thickened and raised in folds. The other organs were not examined.

GANGRENE.

By A. T. FERGUSON, D.V.S., Evansville, Indiana.

On December 10th I was called to see a bay gelding which was about 12 years old and weighed about 1,000 pounds.

On carefully examining this case I found him extremely lame, so much so that he would not place any weight on that foot, it being the left front. I diagnosed the case as foot lameness, with the pastern inflamed and also the tendons. But the owner was kind enough to inform me I was in error, and that the lameness was from the shoulder. I carefully examined the shoulder and again told the owner it was a foot trouble. But I did not succeed in persuading him. So to satisfy him I blistered the shoulder against my judgment and will. Sometimes one has to doctor the owner more than the animal. I then proceeded to dress the lower part of the limb. The next day I was informed that this animal had been subject to corns for two years and was lame off and on.

I had already examined the foot and could see no sign of corns. However, I had the shoe removed and a very small, hard corn was found. The animal did not show any signs of pain from this corn while it was being trimmed, even to making it bleed. I concluded the trouble was more serious, and was confined to the inside of the foot. The leg being somewhat swollen and the pastern very much so and very painful when lightly touched. I placed a light blister on the leg, but the blister did not take, for the reason that there was a serum oozing through the skin which hindered my blister from doing its work; but it seemed to have drawn the trouble to the surface near the quarter and I then applied iodine. But the foot grew worse in spite of every effort I made and resisted every form of treatment until I could see the foot gradually mortifying. The pulse became small and almost imperceptible, but the animal would eat and lay down nights. This went on for ten days, and seeing that gangrene had set in I notified the owner that it was no use to continue the treatment. But he was a poor loser, although in good circumstances and well able to take a loss. Instead of taking my advice, he tried about every stable man he could find to take this horse off his hands; but all seemed too wise, and he finally had him destroyed. Had he kept him another day or two it would have been a dead animal anyway.

Now, I believe the cause for this gangrene was that after two years of suffering from this corn that the tissue became weakened and that the intense cold (being zero) must have frozen this foot; or might have so chilled it that it produced mortification, which involved the whole of the foot, producing a nauseating odor. This is the third case I have had of this kind in four years. What's the remedy?—The gun.

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

By PROF. A. LIAUTARD, M.D., V.M.

PERMANENT DISABLEMENT FOLLOWING FETLOCK INJURY [*W. Cargill Patrick, F.R.C.V.S.*].—Seven-year-old hunter showed lameness after a day's hunting. After a few days a good deal of thickening and swelling took place around the near hind fetlock. Great lameness and pain with systemic disturbances. Local treatment was followed with temporary relief. The swelling returned and several abscesses formed and discharged. X-rays were then applied to find the true condition of the joint. Skiagrams were not satisfactory, and a second application resorted to one week after. Shortly afterwards a good deal of improvement was manifested, and lasted so that after two months the horse appeared sound. But after a short spell of exercise, the condition returned as bad as ever and finally the horse was destroyed. At the autopsy osteophytes were found at the lower end of the metatarsal and an ulcerative process of the articular surface of the bone. The question seems to present itself: As long as the X-rays were followed by such improvement should it not suggest the propriety of a more prolonged course of similar treatment?—(*Veter. Record.*)

BIER'S TREATMENT IN A BULL DOG [*G. Mayall, M.R.C.V.S.*].—Bull dog, Prince, had eczematous sores about his head and hind paws. First he was treated with antiseptic baths, squeezing the sores under the water in the baths and dressing with boracic ointments and a few drops of pure carbolic acid. Calomel and antimony tartrate were given internally. After some relief and apparent cure, the trouble returned, the tarsus being swollen and with more or less discharge. Baths and lysol were resorted to and on each hind leg was put above the hocks an India rubber ring. These were left for two hours, morning and afternoon. After three days of this application the discharge stopped, the sores and swelling were reduced and recovery was radical.—(*Veter. Journ.*)

TETANUS IN DOG [*T. M. Inglis, M.R.C.V.S.*].—Fox terrier is suspected of rabies. But on proper examination was found suffering with tetanus. Six doses of antitetanic serum were administered, while the dog was kept in a dark cage and watched. About the 3d or 4th day he showed some improvement and gradually all the bad symptoms subsided. A small abrasion on one of the forepaws was probably the seat of infection.—(*Ibidem.*)

CAESARIAN SECTION IN A CAT [*H. C. Ganguli, Bengal Veterinary College*].—A white Indian cat was a case of distocia, she had been in pains for over 24 hours. Exploration per vagina revealed part of foreleg of foetus, whose head was twisted inside the womb. Attempts to deliver by the usual methods were quite futile. So the cat was laid on a table, parts of the abdominal walls shaved and disinfected, the animal was chloroformed and the abdomen opened. With aseptic measures, the abdominal cavity was entered and the left horn of the gravid uterus brought into view. The womb was carefully incised and a decomposed foetus removed, with all its covering. Thorough cleaning of the uterine cavity, suturing of the empty organ, that of the abdominal muscles and afterwards of the skin. Cleaning of the skin with lysol and a boro-iodoform collodion was applied. Antiseptic gauze and boric padding with moderate pressure concluded the operation, which was followed without much disturbance by recovery, except an elevation of temperature for two days. In one week the animal was in perfect health.—(*Ibidem.*)

TUBERCULOSIS OF THE BRAIN IN CATTLE [*Ernest J. Bandred, M.R.C.V.S., D.V.H.*].—The writer records two cases that he saw recently. One in a steer seen alive. It held its head and neck stiffly, with the nose poked out, and when made to move did so without turning the head. The history was that he had hurt his head with the tying-up chain. At the autopsy was found tuberculosis of the lungs and pleura with pharyngeal glands diseased. In the depth of the left hemisphere there was a tuberculous lesion about the size of a large hazel nut. The second case occurred in a cow, which was slaughtered because she had had a fit. At rough examination of the carcass no lesions were found and then the head was looked at. There was extensive tuberculosis in the region of the left condyle of the occipital bone, and when the brain was removed half of the left hemisphere was found also affected. The left pharyngeal gland was caseified. More care-

ful examination of the lungs and liver made afterwards showed small centers of tuberculosis.—(*Veter. Journ.*)

TUBERCULOSIS (?) IN A HORSE [*Capt. Graham Rees-Mogg*].—A horse brought to the writer had a nasty discharge from both nostrils. The history being that since he had pneumonia eighteen months before he had a discharge which varied in quantity at times, getting better and then worse. His temperature was 102 degrees F. The horse looks weak and is thin; he was very distressed. He was destroyed. The post mortem showed the right lung had hardly any normal tissue remaining in it. A small portion was in a state of grey hepatization. There were numerous gangrenous cavities with calcareous and caseous matter on their walls. The left lung contained four cavities with calcareous deposits and fibrous tissue in their walls. The bronchial and mediastine glands were diseased. Abdominal organs showed no lesions.

This animal had been able to perform military work since August to October, when he was killed.—(*Veter. News.*)

FRENCH REVIEW.

By PROF. A. LIAUTARD, M.D., V.M.

INCOMPATIBILITY OF DISINFECTION OF TINCTURE OF IODINE AND THE USE OF SUBLIMATE [*Dr. Karpelos*].—The incompatibility of the iodides and compounds of mercury is well known. It is also known that insufflation of calomel in the eyes of a patient, submitted to iodine treatment, may give rise to the most severe results, as the iodine, partly eliminated with the tears, forms, with the calomel, an irritating iodo-mercurial compound which can promote severe pains around the cornea and sometimes ulceration.

Called to treat a felon of the index, the author, after disinfecting the skin of that finger with tincture of iodine, made an incision, evacuated the pus and covered the region with gauze moistened with solution of sublimate at 1 to 1,000, with directions to the patient to pour every three hours a little of the solution over the dressing.

The next day the finger was very sore, covered with little vesicles, a dermatitis was present, which required 15 days to get well. If in a tube containing a solution of bichloride of mercury

at 1 to 10,000 two or three drops of tincture of iodine are poured in there will be formed a red precipitate of iodide of mercury, which has a great irritating power. This was the case in the above record.—(*La Semaine Medicale.*)

FILLING TEETH IN ANIMALS [*Dr. Emsloff*].—The writer makes a speciality of veterinary dentistry. He has already published the details of his *modus operandi*. The filling is made with an amalgam of copper, easy to work with, which is introduced in the tooth without violent pressure nor painful knockings. The matter moulds itself perfectly in all the anfractuositities of the tooth, is not attacked by saliva, does not retract with age, has no antiseptic action and stands perfectly the work of mastication.

Silicated cement has also some advantages, but cannot be used unless with complete absence of saliva, which renders its solid application difficult.

The instruments used by the doctor are the same as those used by human dentistry when working on teeth of dogs or incisives of horses. For molars of this last species instruments of various length are required.

The animal cast, or standing for incisives, cleaning of the cavity is made with scrapers, curettes, etc. The cavity is cleaned of all that may remain by a strong blowing with bellows, then follows a washing with hot water, disinfection with phenic acid, drying up by a spray of ether and another strong blowing. The tooth is filled with the amalgam, introduced in small lumps and firmly packed in until complete repletion of the cavity. The amalgam is hardened in two hours. During that time food must not be allowed, but the animal can drink without inconvenience.—(*Zeitsch. fur Veter. and Revue Gene.*)

TUMOUR OF SUPRARENAL IN A BOVINE [*Mr. C. Fairise.*].—It was situated at the antero-internal extremity of the left kidney of a cow. It was spherical, measured 15 centimeters in diameter and weighed 2 kilograms. Surrounded with a fibrous envelope, rather thick, it had hemorrhagic centers, parts in necrobiosis and pseudocysts containing gelatinous fluid. The histological aspect of the tumor was that of a perithelioma. The presence of elements resembling those of the supra renal capsule, suggested the thought of its being an epithelioma of that organ. Such tumors may exist in herbivorous animals enjoying perfect health; they have more a tendency to necrosis and calcification than generalization.—(*Revue Veter.*).

BACTERIAN FLORA OF NORMAL UDDER [*Harrison and Savage*].—The authors have made their researches on heifers, one and two years old, which had had no calves yet, and on seven cows. The flora of the udder consists of a very small number of microbial species, which are almost exclusively micrococci. The species found in the teats, put aside with the first streams of milk, are subject to variations. The flora of the remaining portion of the gland is practically constantly the same. If the flora of the lower regions of the gland is due to external contamination by the galactiferous canals, the flora of the glandular parenchyma seems on the contrary to have an internal origin. Microbes found in the lower part of the udder cannot penetrate in the superior secreting regions.—(*Bullet. Pasteur Institute.*)

STUDY ON A CASE OF CARDIAC "BLOCKING" IN DOG [*Dr. Bachmann*].—This affection, well studied in man, is also called "auriculo-ventricular dissociation." The number of ventricular pulsations is no longer equal to that of the auricular contractions. Auricles and ventricles seem to be independent, from a functional point of view. "Blocking" of the heart, partial or complete, is but one form of this dissociation. For instance, the exciting of the pneumo-gastric inhibits the auricles without having any influence on the ventricles. These are said to be "blocked." They do not obey or escape on excitation. In general, the ventricular contractions are less numerous than the auriculars, the result being a very marked slowness in the pulse.

These symptoms are due to a lesion of the auriculo-ventricular uniting band of the fasciculus. If this muscular bridge is destroyed, all functional relations are cut between the auricles and ventricles. The rythm is deeply disturbed. This trouble deserves attention, as the treatment differs from that of ordinary cardiopathies.

The relation of Bachmann is important, as it reveals the existence in the dog of a disease which clinically had yet been studied only in man. The lesions found at the post mortem were typical. The auricular septum presented conjunctive thickenings which were found also surrounding and pressing the fibres of the fasciculus of His, in all its extent. The auricular muscular structure was infiltrated with fat, above the fasciculus, which itself was fatty. The muscular fibres of communication between auricles and ventricles were considerably reduced in number. It will be a disease difficult to diagnose in dogs as it is a delicate operation to explore the jugular pulse to count the frequency of the auricular beatings.—(*La Semaine Medicale.*)

CORRESPONDENCE.

GONE, BUT NOT FORGOTTEN.

Nebraska Live Stock Sanitary Board,
LINCOLN, NEBRASKA, January 8, 1915.

AMERICAN VETERINARY REVIEW, 509 West 152d street, New
York City, N. Y.:

Gentlemen.—I take this opportunity of submitting to you the following for publication:

In my opinion I feel sure that the veterinarians as a whole over the United States will regret to learn that Dr. A. Bostrom, former State Veterinarian of Nebraska, and for the past two years Chief of the Nebraska Stallion Registration Board, has resigned his recent position and expects to retire from active work.

In my opinion I can proudly say that Dr. Bostrom was one of the most conscientious, painstaking State Veterinarians that ever had the privilege of holding office in this great Universe.

I also wish to say that he was a man who did his own thinking. He was kind and generous to those with whom he came in contact, as long as they asked for what was fair, right and just, but had the stamina to refuse anything and everything that was not in accord with the advancement of our profession and protection of the live stock industry of this State.

Dr. Bostrom was one of the first State Veterinarians to investigate the interstate shipments of dairy cattle, leaving the infected districts of a couple of our central and eastern States.

In succeeding Dr. Bostrom in this office, I felt a great task before me, really one that I felt that I could not master to the satisfaction of the profession or the people as a whole, owing to the efficient and satisfactory work that Dr. Bostrom had given while he had charge of this department.

I have put forth every effort within my power to carry out many of the proficient systems that Dr. Bostrom established while he had charge of this office.

I am sure that the different State Veterinarians will miss Dr. Bostrom's instrumentality at the different national meetings held.

He was always present, and ready to answer the call of reading a well-prepared paper that no doubt would be of great enlightenment to any man who would hear him give his instructions and views to their branch of science and livestock protection.

May we all join and wish Dr. Bostrom a long and happy retired life.

Very truly yours,

L. C. KIGIN,

Deputy State Veterinarian.

BUILT IT HIMSELF.

SEYMOUR, INDIANA, January 11, 1915.

AMERICAN VETERINARY REVIEW, 509 West 152d St., New York, N. Y.:

Am sending you picture of new hospital built by myself.

This building is 50 by 70. Four box stalls 13 by 14; six open stalls 7½ feet wide; table in one corner; stalls dirt floor;



Dr. Lett's Veterinary Hospital.

main floor of barn concrete. Main office, private office and drug-room back of private office.

Yours respectfully,

H. LETT, M.D.C.

A CORRECTION.

Michigan Agricultural College, East Lansing, Mich., January 15, 1915.

Editor AMERICAN VETERINARY REVIEW, New York City:

DEAR SIR—I desire to correct a statement accredited to the Columbus Ohio, *Citizen*, but published in the January issue of the REVIEW. The words to which I wish to take exception are: "Ohio State and Michigan are now the only two schools east of the Mississippi that permit students to enter this course (referring to veterinary medicine) without high school credits."

On the contrary, there has never been a time when students could enter the course in veterinary medicine at the Michigan Agricultural College with less than the equivalent of fifteen units of preliminary work. Further than this, the M. A. C. veterinary course is not only an advocate for higher education, but is a pioneer along such lines, as is amply evidenced in its present requirement. It stands alone among the colleges in the territory above referred to in demanding jointly high school graduation (minimum 15 units) and four years of college work for the degree of D.V.M. That it has successfully passed over the experimental stages of this high requirement is demonstrated by its present enrollment of more than half a hundred students.

Very truly yours,

R. P. LYMAN.

DOURINE IN NEBRASKA.

Nebraska Live Stock Sanitary Board,
Lincoln, Nebraska, January 9, 1915.

AMERICAN VETERINARY REVIEW, 509 West 152d street, New York City, N. Y.:

Gentlemen.—Again I take the opportunity to inform you, for publication, that dourine was found to exist in this State the past fall.

Upon investigation we found that this disease had crept into this State through a shipment of stallions and mares from the State of Wyoming. Immediately after finding that this disease existed in this State the Nebraska Live Stock Sanitary Board placed a quarantine on five counties, which prevents any stallion or mare from being shipped out of that territory.

Our Legislature is in session at present time, and this matter will be laid before them, and I am sure that a campaign against this disease will be started in the spring to eliminate it.

I might state that the Government was kind enough to detail a man to assist me in collecting 113 samples of blood, which we submitted for the complement-fixation test, and this test showed 5 positive reactors, and also 6 suspicious.

Yours truly,

L. C. KIGIN, *Deputy State Veterinarian.*

THE RIGHT MAN IN THE RIGHT PLACE.

Quincy, Massachusetts, January 8, 1915.

AMERICAN VETERINARY REVIEW, *New York*:

Dear Sirs.—The following item may be of interest to many of your subscribers:

The veterinarians of Massachusetts are very well satisfied with the action of Governor Walsh in placing even temporarily, but we hope permanently, into the office of CHIEF OF DEPARTMENT OF ANIMAL INDUSTRY, Dr. Lester Howard, of Boston, a veterinarian of marked ability and an active member of both the Massachusetts and the American associations. He is a man of fine presence, education and experience. He is a credit to the profession, and we believe him to be the right man in the right place.

Sincerely yours,

FRANCIS ABELE, JR.

DR. E. B. ACKERMAN, Chief Veterinarian to the Department of Health of Greater New York, tendered his resignation from the Department to Commissioner Goldwater early in January to take effect February 1. Dr. Ackerman has been connected with the department for more than 20 years.

THE Thanksgiving Day Horse Show held by the Speedway Club of Kansas City was a most successful affair. Several thousand people were in attendance, and it is an assured fact that henceforth the show will be an annual event.—(*The Horse Lover.*)

BIBLIOGRAPHY.

THE ANATOMY OF THE DOMESTIC ANIMALS.

THE ANATOMY OF THE DOMESTIC ANIMALS, by Septimus Sisson, S.B., V.S., Professor of Comparative Anatomy in the Ohio State University, Columbus, Ohio; Member of the American Association of Anatomists; Fellow of the American Association for the Advancement of Science. More than 300 pages, with 725 illustrations, many in colors. Second edition entirely reset. Philadelphia and London; W. B. Saunders Company, 1914.

This book takes the place of the same author's Text Book of Veterinary Anatomy, which appeared in 1910 and soon came to be recognized as the standard work on the subject in English-speaking countries. The new book is a large octavo volume of 930 pages, beautifully printed on paper of the best quality, and well bound in cloth or half-morocco. As a teacher of long experience, Professor Sisson evidently realizes that in anatomical treatises in particular the chief desideratum is an ample supply of good illustrations. The new Anatomy contains 725 figures, and it is quite safe to say that no other work on the subject approaches it in number and quality of illustrations. The great majority of the figures are original and are reproductions of photographs of anatomical material made by the author. This mode of illustration is a recent innovation in our anatomical literature, and the results are most striking, artistic beauty being combined with photographic accuracy in a remarkable manner. Colors have been freely used wherever it seemed desirable to facilitate ready reference and quick understanding of the figures; many illustrations are in three colors—a very valuable feature to the busy practitioner who may wish to refresh his memory in preparation for operative procedure.

The superficial observer might at first be inclined to regard the book as being somewhat large for a student's text, but a little more careful inspection will show clearly that the bulk is due to the large number and size of the illustrations, and not to any padding or prolixity in the text. Indeed, considerably more than half of the space is taken up by the figures. The descriptive statements are as brief as is possible consistent with intelligibility, and are very lucid and easily followed. Excellent judgment has been shown in the selection of matter of chief professional importance, and the exclusion or brief consideration of facts of less

interest. The use of bold-faced type for principal names and the careful paragraphing are valuable aids to the reader. The large amount of topography, both in text and illustrations, makes the book of special value in clinical work. The data in this regard are to a large extent the results of the author's own investigations; many of them are entirely new facts and others are corrections of current but incorrect views. They constitute an important contribution to our knowledge of the structure of our chief domesticated animals. Such contributions to veterinary science can be made only by well-trained men who will intensively and enthusiastically devote their energies to a chosen field of work.

In a work which covers so large a field it is not possible in a brief review to refer in detail to special features of the text. It may be noted that particular attention has been given to the lymphatic system; the description of this system in the Ox is much fuller than usual, a fact which will be appreciated by those engaged in meat inspection and other applications of pathology.

The nomenclature has been revised in accordance with the report of the Committee on Revision of Veterinary Anatomical Nomenclature of the A. V. M. A., adopted at the Indianapolis meeting. The changes made in this respect constitute a long step toward a more simple and uniform terminology. Substantial progress in this direction can be made only by co-operation, and personal preferences or prejudice should not be allowed to stand in the way of an elimination of much of our present anatomical Babel.

It is self-evident that a work of such magnitude and difficulty involves a great deal of labor, and the REVIEW congratulates Professor Sisson on the successful manner in which it has been accomplished. Great credit is also due the publishers for the production of a superb piece of book-making. In view of the very high cost involved in the publication of a book of this kind the price is to be regarded as quite reasonable.

DAIRY CHEMISTRY.

DAIRY CHEMISTRY, A PRACTICAL HANDBOOK FOR DAIRY CHEMISTS AND OTHERS HAVING CONTROL OF DAIRIES, by Henry Droop Richmond, F.I.C., Analyst to the Aylesbury Dairy Company, Limited. Second edition, revised. More than 400 pages, with numerous tables and 49 illustrations. London: Charles Griffin and Company, Limited, 1914.

The first edition of this work was exhausted more than seven years ago, and owing to the author's ill-health it has been impos-

sible to make the revision necessary sooner. So that by lapse of time certain portions of the text in the first edition have become obsolete, and these have been deleted and replaced by matter based on the latest investigations. It has been found necessary to rewrite many sections and to insert methods which have been devised since the first edition was published, which has involved the resetting of the work throughout, although no alteration has been made in the plan or scope. New illustrations have been introduced and the index greatly improved. The object of this work is to provide dairy chemists, medical and veterinary officers and dairy farmers with a guide for the chemical control of dairy operations. Chapter I—*Introductory—The Constituents of Milk*; Chapter II—*The Analysis of Milk*; Chapter III—*Normal Milk—Its Adulterations and Alterations and Their Detection*; Chapter IV—*The Chemical Control of the Dairy*; Chapter V—*Biological and Sanitary Matters*; Chapter VI—*Butter*; Chapter VII—*Other Milk Products*; Chapter VIII—*The Milk of Mammals Other Than the Cow*; Chapter IX—*Standardization and Calibration of Apparatus*. The author's own great experience as analyst to the Aylesbury Dairy Company is augmented by that of his predecessor for twelve years in the same capacity, Dr. Paul Vieth (now Professor in and Director of the Dairy Institute at Hamelin), who passed his accumulated observations of twelve years to his successor. So that the work is based upon observations of facts, rather than theory, the value of which is too obvious to require argument or emphasis. Cloth-maroon and gold.

FROM SECRETARY'S NOTES, N. A. B. A. I. E.—“I regret to report that National President Gibson has unfortunately suffered a severe injury while in the discharge of his official duties during the foot and mouth epidemic. He is now carrying a fractured rib, gotten from holding a 1,400 pound steer. He was successful in holding the steer, but the cruel caprice of fate is that he will carry the fractured rib to his grave. All members in corresponding with or interviewing members of congress should bear in mind that this is merely one of a large number of injuries suffered by Bureau employees engaged in the eradication of foot and mouth disease and eradication of hog cholera. The hazards connected with this work are such that it is unreasonable to expect Bureau employees to render an efficient service at the present inadequate rates of compensation.”

SOCIETY MEETINGS.

CENTRAL NEW YORK VETERINARY MEDICAL ASSOCIATION.

The fifth semi-annual meeting of the Central New York Veterinary Medical Association was held at Syracuse, N. Y., on November 24, 1914. The following members were present: W. G. Hollingworth, H. A. Turner, W. B. Switzer, F. E. York, J. E. Pendergast, J. M. Currie, D. C. Papworth, W. M. Sullivan, E. E. Cole, E. E. Dooling, Frank Morrow, W. L. Clark, R. C. Hurlburt, R. M. Weightman, A. H. Ide, J. C. Stevens, J. V. Townsend, Frank Fowler, J. K. Bosshart, C. R. Guile, W. F. Burleigh and V. A. Moore. The association had as its guests Dr. P. A. Fish, President of the New York State Veterinary Medical Society, of Ithaca, N. Y.; Dr. Otto Faust, Vice-President of the New York State Veterinary Medical Society, of Poughkeepsie, N. Y.; Dr. J. G. Wills, State Veterinarian, Albany, N. Y.; Dr. D. D. LeFevre, of Newark, N. Y.; Dr. W. H. Saulsbury, Clifton Springs, N. Y.; and Dr. Winters, of Syracuse, N. Y. Merritt A. Switzer, Esq., attorney for the association, of Fulton, N. Y., was also in attendance.

The meeting opened at 10 o'clock, a. m., at the Infirmary of Dr. H. A. Turner, in South Salina street, where a clinic was held and the following subjects operated upon:

Case 1: Black horse belonging to the Syracuse fire department; nasal gleet; had previously been trephined in two places by Dr. J. A. Pendergast; re-trephined by Dr. Pendergast, assisted by Dr. Otto Faust.

Case 2: Gray gelding; navicular disease; median neurotomy performed by Drs. J. C. Stevens, H. A. Turner and W. L. Clark.

Case 3: Chestnut gelding; epithelioma; removed by Drs. Frank Morrow, A. H. Ide and W. L. Clark.

Case 4: Chestnut gelding; calculus in bladder; removed by Drs. A. H. Ide, E. E. Dooling and H. A. Turner.

Case 5: Roan gelding; poll-evil; operated on by Drs. H. A. Turner and J. A. Pendergast.

Case 6: Brown mare; median neurotomy; performed by Drs. J. A. Pendergast and H. A. Turner.

At the close of the clinic luncheon was served at the infirmary.

The business session was held at the St. Cloud Hotel at 2 o'clock p. m., President W. M. Weightman presiding.

An application for membership was received from Dr. W. J. Doyle and referred to the Board of Censors.

The prosecuting committee, through its attorney, reported that the action against Leo F. Horder for alleged illegal practice had been discontinued without costs to either party upon the agreement of Mr. Horder to discontinue practice until such time as he should be legally qualified, it appearing that he had entered a preparatory school. Upon motion, duly made and carried, the secretary was instructed to extend to Mr. Horder the good will of the association in view of his effort to become qualified.

The privilege of the floor having been granted to the visitors, Dr. Fish spoke upon the newly organized Southern Tier Veterinary Medical Association and extended to this association the invitation of that body to attend its meetings. Dr. Otto Faust, of the Hudson Valley Veterinary Medical Association, also recently organized, told the members of the success of that organization.

The President appointed Drs. Stevens, Dooling and Currie members of the prosecuting committee for the current year.

Papers were presented by the following members:

Dr. Frank Morrow, Utica, N. Y., "Some of the Cases We Meet in Dog Practice."

Dr. P. A. Fish, Ithaca, N. Y., "Bob Veal."

Dr. V. A. Moore, Ithaca, N. Y., "Hog Cholera."

Dr. C. R. Guile, Fulton, N. Y., "Case Report."

Dr. Otto Faust, Poughkeepsie, N. Y., "Some Interesting Cases in My Practice."

Dr. W. G. Hollingworth, Utica, N. Y., "The Veterinarian Should Advocate Humane Methods."

Dr. M. W. Sullivan, Marcellus, N. Y., "A Very Peculiar Bowel Case."

Dr. J. G. Wills, State Veterinarian, Albany, N. Y., address, "Foot-and-Mouth Disease."

Dr. P. A. Fish, as President of the New York State Veterinary Medical Society, in connection with his paper, called upon the members to give loyal support to the State Society and outlined the work before that body.

The papers presented at this meeting were the most carefully prepared and the most interesting of any yet given before this association and called forth very helpful discussions.

No other business appearing, the meeting was regularly adjourned and the members banqueted at the hotel.

W. B. SWITZER, *Secretary*.

OHIO STATE VETERINARY MEDICAL ASSOCIATION.

The Ohio State Veterinary Medical Association held its thirty-second annual meeting at the Ohio State University, Columbus, on January 6th and 7th. The sessions were largely attended, about three hundred veterinarians being present. The harmony and unusual interest which have characterized the last few annual meetings have convinced us that the veterinarians of Ohio have developed a professional interest in each other and in the profession which is of an increasingly pleasing magnitude. Never was the profession in Ohio in a more encouraging condition than right now.

The features of the program, which was excellent throughout, were: *The Foot and Mouth Disease in Ohio*, Dr. Marion Imes, B.A.I., Inspector in charge of Ohio; *The Progress of Hog-cholera Eradication in Ohio* (with special reference to Fayette County), Dr. Paul Fischer, State veterinarian; *The European Tour of the A. V. M. A.*, Dr. E. H. Shephard, Cleveland; *The Veterinarian and The Agriculturist*, A. P. Sandles, President Agricultural Commission of Ohio. The closing address, which proved to be the real feature of the meeting, was on "*The Veterinarian Himself*," by Dr. John Adams, Professor of Surgery, University of Pennsylvania. Would that every veterinarian in our great Union could have heard Dr. Adam's address, for it has been and will long continue to be of inestimable value to those present.

The dinner session, which was held January 6th, at 6.30 p. m., in the Ohio Union, O. S. U., reminded one more of an A. V. M. A. banquet than that of a State Association meeting. One hundred and ninety sat down to this turkey dinner, and the success of the occasion promises even a larger attendance at this delightful and very essential session of our next meeting. The retiring officers were profusely congratulated on the success of every feature of the sessions.

The election of officers for the ensuing year resulted as follows; President, Dr. F. F. Sheets, Van Wert; Vice-president, Dr. Reuben Hilty, Toledo; Treasurer, Dr. David S. White, Columbus; Secretary, Dr. F. A. Lambert, Columbus.

F. A. LAMBERT, *Secretary*.

NEWS AND ITEMS.

ANTI-TUBERCULOSIS LEAGUE ACTIVE: We see by a recent issue of one of the Lawrence, Mass., dailies that the ANTI-TUBERCULOSIS LEAGUE of that city, of which Dr. John F. Winchester is a member, has been very active recently. Other members of the league are clergymen, laymen and women.

INTELLIGENCE IN HORSES.—Horses chosen for the military service show marvelous intelligence and quickness in adapting themselves to its requirements, says Denver *Field and Farm*. They learn the bugle calls and the evolutions sooner, as a rule, than the average recruit. The quickly acquire a uniform gait, which is about the same as the route or usual marching step. If the horses did not fall habitually into the same gait as the infantry, there would be varying distances between the different arms of the service. In the drills in the artillery service the horses preserve their alignment as well as the infantry ranks. It is remarkable how quickly the army horse learns the bugle calls and their significance. Let the first note of the feed or water call be sounded, and instantly there will be stamping, kicking and neighing among the horses, impatient for that call to be answered. Once during a storm at night in a camp the horses were seized with such terror that those of nearly every battery broke loose and went scattering about in their fright. The next morning there was a wild rush by the artillerymen to capture the horses. All was excitement, and the still-alarmed horses refused to be taken. An officer ordered the bugler to sound the feed call. He gave the call and instantly horses from every direction came dashing into that battery and the equine discipline was soon restored. When it comes to battle the trained army horse seems to know everything that is going on and the reason for it, and does his duty nobly. He enters into the spirit of the fight like his human comrades.—(*The Horse Lover*.)

SERIOUS MISUSE OF GOVERNMENT FIGURES BY MAKERS OF HOG-CHOLERA REMEDY.*

WASHINGTON, D. C.—The attention of the Bureau of Animal Industry of the United States Department of Agriculture has

*Office of Information, U. S. Dept. of Agriculture.

been called to the fact that the makers of a medicine sold as a hog-cholera remedy are misusing Government figures of the results obtained by Federal agents by the use of antihog-cholera serum, as evidence of the efficacy of their medicine. In several magazines there have appeared reading notices in which there are statements that this medicine has resulted in saving many hogs from hog cholera in Pettis County, Missouri, Montgomery County, Indiana, and Dallas County, Iowa. The figures given to indicate the results are exactly those reported to the Department by its agents as showing the use and effect of antihog-cholera serum in sick herds.

For example, the Government figures on the use of serum, which are misused in this way by the medicine concern, are as follows:

Pettis County, Mo.—

Hogs in infected herds treated.....	5,904
Hogs lost	1,038

Montgomery County, Ind.—

Number of sick hogs in infected herds treated.....	4,562
Hogs lost	894

Dallas County, Iowa—

Number of sick hogs in infected herds treated.....	5,686
Hogs lost	1,998

It is scarcely possible that any remedy could have been used on identically the same number of hogs and with exactly the same results as the antihog-cholera serum. On this point the Inspector in charge in Pettis County, Missouri, states: "As far as we are able to ascertain none of this remedy has been used in Pettis County."

Farmers and others, therefore, are warned not to confuse this "remedy" with the antihog-cholera serum, which is the one method of treatment used by the Federal Department of Agriculture.

MORE HORSES IN NEW YORK CITY THAN EVER BEFORE—
111,000, ACCORDING TO EQUINE CENSUS.—In its effort to stamp out glanders, perhaps the most insidious and dangerous disease that horseflesh is heir to, the State veterinary authorities, acting under the direction of the Commissioner of Agriculture, have just completed the first horse census ever undertaken in New York.

Breeders, owners, dealers and horse fanciers generally will be interested in knowing that it discloses an equine population of 110,144, which is many times larger than the number of automobiles in the city, even including the dead ones, and probably is greater than the whole number of motor vehicles in use in the State. The Borough of Manhattan alone has 56,434 horses, and there are 36,184 in Brooklyn, 8,600 in the Bronx, 5,583 in Queens, and 3,343 on Staten Island.

Experts have frequently tried to estimate the number of horses in New York, but it is believed that no one ever guessed up to the actual total as disclosed by the State census just taken. The late J. D. Carroll, treasurer and general manager of the Fiss, Doerr & Carroll Horse Company, fixed the number at about 100,000 a few years ago, and this turns out to have been a close guess, for despite the activities of the automobile makers and dealers the number of horses has kept increasing from year to year and is now probably 10,000 larger than it was when Mr. Carroll made his reckoning.

Besides, counting all the horses the State authorities counted all the stables in the city and tabulated them as to character, sanitary condition, ventilation, ownership and number of horses, and then cross indexed these statistics by the card system, so that hereafter full information will be at hand concerning every important detail of the equine population.

Dr. H. D. Gill, who had charge of the canvass, says that the records just collected will be of inestimable value to the authorities in dealing with the problem of stamping out glanders. By a system of inspection and records not unlike those of the dairy farms now under State supervision the veterinarians expect to be able to locate at once all outbreaks of glanders and prevent the disease from spreading, as it has done in the past. Owners who fail to provide healthy quarters for their horses will, it is expected, be quickly singled out, and the officials will have authority to make them mend their ways or give up their horses. Stables in which repeated attacks occur will be fumigated, sterilized and put in thorough sanitary condition or else closed to the keeping of horses.

One of the important features of the new card index system is that it will enable the veterinary authorities to trace any particular horse from one stable to another, wherever he may go in the city, and thus guide the doctors in keeping watch of all animals with which a diseased horse may have come in contact. If necessary

each stable where a glandered horse has been kept can be quarantined until its inmates have been tested for disease, thus cutting off the chances of communication to healthy horses.

Though the Borough of Manhattan has 20,250 more horses than Brooklyn, it has less than one-half as many stables. The Borough across the bridges has, indeed, almost as many stables as all the rest of the city taken together. Its 36,184 horses are housed in 5,261 different buildings, while in Manhattan there are only 2,130 stables for 56,434 horses. The average number of horses in a stable is thus more than twenty-six on this side and seven on the other side of the East River. Staten Island, however, has more room for its horses than Brooklyn or any other Borough has, the average there being less than three occupants to each barn. The following table, furnished by Dr. Gill, shows the records for the five Boroughs:

Borough	No. Horses.	No. Stables.	Average.
Manhattan	56,434	2,130	26½
Brooklyn	36,184	5,261	7
Bronx	8,600	1,216	7
Queens	5,583	1,167	4½
Richmond	3,343	1,306	2½
Totals	110,144	11,080	10

In connection with the new records of the city's equine inhabitants Dr. Gill and his associates are now putting into effect a system of identifying the horses by fastening a sealed band around the neck of each animal that is tested for glanders. The band carries a number, and in time it is expected that each horse in the city will be registered in this way, so that he can be located at any time and his history traced from the time he arrives in New York until he leaves the city.—(*The Horse Lover.*)

A SUMMARY OF THE SITUATION ON FOOT AND MOUTH DISEASE DEDUCTED FROM A REPORT TO THE OFFICE OF THE UNITED STATES LIVE STOCK SANITARY ASSOCIATION TO JANUARY 13, 1915: *Connecticut* has eight counties under federal and state quarantine, and does not know when the state will be entirely released. Probably not before February 1. *Delaware* has only

one county now under federal quarantine; had three counties quarantined since early in November until December 17. *Indiana* had eighteen counties under state quarantine from beginning. Now have privilege of moving stock on farms for purposes other than immediate slaughter. Sixteen other counties have been placed under quarantine by the federal government against interstate shipment on account of the disease being within fifteen miles of their borders. Nine more counties will probably soon be released. *Iowa* has fifteen counties under both federal and state quarantine; nine of which are permitted to ship stock to slaughter without inspection; no infection has been found in them. The foot and mouth disease infection having been confined to Iowa, Jones, Cedar, Jackson, Johnson and Clinton counties, from which shipments must be inspected by collaborating veterinarians appointed by the B. A. I. If no further outbreaks occur, Iowa will be released about February 1. *Illinois*. No official report. It is understood that objection from owners to control and slaughter methods pursued by federal and state officials culminated in a temporary injunction issued January 11, by Judge Irwin, Kane County Circuit Court, sitting at Elgin. This injunction restrains the State Veterinarian from the slaughter of a herd of 40 cattle at St. Charles, Illinois, scheduled for slaughter January 12. While the injunction effectually halts the slaying of infected or exposed cattle for the time being, it may be dissolved at a subsequent hearing, if the state authorities can convince the court that no other method of handling the disease will cope with the situation. The petition on which the injunction was granted alleged: "That the hoof and mouth disease is not necessarily fatal and can be stamped out by quarantine. That there has been no appropriation by the state to reimburse farmers for losses. That the state law under which the slaughter has been ordered is unconstitutional and that it is an unjust burden to taxpayers." *Kentucky*. Losses in Kentucky on account of foot and mouth disease, 817 cattle, 308 hogs. Disease found in eight counties only. *Maryland* has ten counties under quarantine; but the whole state is under quarantine as far as shipment of cattle is concerned. Impossible to state when the federal quarantine will be raised. *Massachusetts*. The whole state is under quarantine, but which is being rapidly modified under the permit system, allowing rather free movement of cattle excepting in or immediately adjacent to infected premises. *Michigan* has nineteen counties under federal quarantine, and thirty-three townships under state quarantine.

At one time the federal government had the entire state under quarantine but has now released all but nineteen counties. It is expected that the entire state will be released by the end of January. *Montana*. Entire state of forty-one counties was under federal quarantine; now reduced to three counties. Hope to be entirely released by end of January. *New Hampshire*. Two counties were quarantined by both state and federal governments. Federal government has not yet raised their quarantine of those counties; although the state has released them except as applying to a few towns in the immediate vicinity of where the disease broke out. There were only three cases in the state, all at the same place. *New Jersey* has no cases of foot and mouth disease at present, although several suspicious cases still under observation. Still under federal and state quarantine and impossible to tell when it will be released, but probably in a few weeks. *New York* was quarantined by the federal government, and the state quarantined its sixty-two counties. The federal quarantine has since been raised from thirty-four counties, leaving twenty-eight still under federal quarantine. Up to January 5, seventy herds had been affected and 3,500 cattle slaughtered. Of these 600 head, killed under the most careful state and federal inspection, have been passed for food. Hope for modification of the federal quarantine within the next few weeks is entertained. *Ohio*. Entire state was placed under federal quarantine; actual disease found only in thirty of the eighty-eight counties, except Cuyahoga county in which a carload of diseased cattle was shipped, but they were destroyed immediately without exposure. Last outbreak in state, January 1. *Pennsylvania* originally had its entire state comprising sixty-seven counties under federal and state quarantine. This was modified from time to time, until on the date of their report to the office of the U. S. Live Stock Sanitary Association (January 4) there were but 25 counties under quarantine. Further modification was anticipated two weeks later. *Rhode Island* had all counties in the state under quarantine, but had two released at time of their report. *Virginia* had but one outbreak in the state. The infected cattle, seventeen steers that had come from Maryland, were killed by the federal authorities in co-operation with the state men. No other cases in the state. The county where the herd was destroyed is under quarantine, both federal and state. *Wisconsin* had thirteen counties under quarantine, several of which had been released in whole or in part at the time of the report (December 30, 1914). The extent of the disease in two counties could not be estimated at that time.

AMERICAN VETERINARY REVIEW.

MARCH, 1915.

EDITORIAL.

EUROPEAN CHRONICLE.

Bois Jerome, January 15, 1915.

ON TUBERCULOSIS: If one reads or even only glances at medical papers, veterinary or human, his attention will every time be called to articles on this ever interesting subject. These articles always vary, treat of different aspects, of various points of view, but all are valuable information that one can benefit by.

Amongst those, which it has been my good fortune to read, one is from the *Analysis of the Bulletin of Pasteur Institute*, and I feel that the readers of the REVIEW might as well benefit by what I found in some of them, which I give, with the various titles under which they are presented, and the names of the authors.

HUMAN AND BOVINE TUBERCULOSIS IN YOUTH: Drs. Fraser and Delepine are the authors.

Out of 70 cases of tuberculosis that the former has observed in children, aged from one month to twelve years, he has found 41 due to bovine bacilli, 26 with human and 3 with mixed.

In a great number of cases with human bacilli, there was found in the family tuberculous relations or contamination by the immediate neighborhood of the one affected with the disease.

Delepine concludes that the diminution of mortality in children by tuberculosis, was due to the hygienic condition of milk, and that out of tuberculous children of less than a year old, 25 at least were infected from bovine origin; at least in Manchester,

where the observations were made. Since the hygienic condition of milk has been realized, the mortality has dropped from 17 to 6 per cent.

TUBERCULOSIS IN MAN AND ANIMALS: According to Dr. Weber, the distinction between the human and bovine type of tuberculosis appears definitively *legitimate*. The bovine bacillus is undoubtedly pathogenous to man, as statistics show a collection of 138 cases, in which 56 were fatal, by infection of man by bovine bacilli, and yet the part that they play in human tuberculosis remains extremely small.

According to Malm, the distinction between the two species is altogether *relative*. The characters ordinarily given are neither fixed nor constant. There is a bacillus of mammalia. Naturally man is specially infected by man, because he frequents them most, and bovines by bovine bacillus for the same reason. But the bovine type is dangerous to man and *vice versa*.

BOVINE BACILLI IN MAN TUBERCULOSIS: This is presented by three writers, MM. Cosco, Rosa and De Benedictis. One of the authors in examining meat at a slaughter house, made on himself a small superficial wound. A tubercle formed, which twice gave a small scab and a little caseous matter, and which then was cured, leaving an insignificant cicatrix. The caseous matter was injected into a guinea pig. He became tuberculous; tissues from him and cultures obtained with them, gave rise in two calves to a tuberculosis rapidly fatal. Test made on a rabbit, indicated also a bovine bacillus.

TUBERCULOSIS OF HORSES: This is the relation of eight cases of tuberculosis in horses, made by Drs. Zwick and Keller, where the bacillus was isolated in the state of pure culture, five times from the lungs, twice from the spleen, once from the liver and with injections to guinea pigs, rabbit and chicken.

There never has been once aviary bacillus, but in five cases it was bovine, the other three belonged to the human type.

These researches show that horses may be contaminated by tuberculous bovines.

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As long as I am on the subject of tuberculosis, I will mention a record from two professors of the Lyon school, which was published in the *Bulletin de la Société des Sciences* and headed *Visceral Tuberculosis and Granulie in the Horse*.

The authors have observed the case in a horse, which was in good, fat condition, aged eight years, which had lost some of his appetite, was dull while at work and easily out of breath.

The respiration was accelerated, 40 a minute, there was frequent cough. No adenitis was present. Some mucous rales and increased respiratory murmurs were heard at auscultation. Acute bronchitis was diagnosed.

Notwithstanding severe treatment, the horse grew worse, became cachectic and died twenty days after its entrance at the hospital.

At *post mortem*, there was found a very large spleen, three times its normal size, and filled with nodules of various sizes, which on section appeared caseous and some calcified.

The mesenteric glands were very large and formed of greyish tissue. The lymphatic vessels were nodulous, specially near the small curvature of the intestines. On the mucosa of the ileum, there was an ulceration. The lungs were congested with numerous grey or yellow granulations, under the pleura in both organs. The tracheo-bronchial glands were large, some necrotic, others calcified.

The authors on account of these lesions considered that they belonged to tuberculosis. The diagnosis was confirmed with the method of Ziehl, which brought out the bacilli of Koch.

The case was one of acute pulmonary granulie, consecutive to tuberculous lesions of the viscera of the abdomen. It was a tuberculosis of intestinal origin.

On histological sections the authors have observed that the tubercles had never progressed towards caseification, although few presented traces of it.

The bacilli were very numerous as it is the case in horses.

Then the clinical symptoms of this equine tuberculosis were not characteristic and not in proportion with the important lesions

found at the autopsy. It is thus in all latent tuberculosis, which present as the only clinical sign a progressive cachexia and which suddenly pass to the acute stage, because of any traumatism, and end in death.

The origin of the infection of this subject could not be established. He lived with another horse in a stable, with five cows, neither of which gave a positive reaction with tuberculine.

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CONTAGIOUS VAGINITIS—ITS INFLUENCE ON STERILITY AND ABORTION IN COWS—SCIENTIFIC VALUE OF TREATMENTS IN USE: Under this heading, Prof. Rautmann has published an article in the *Berliner Tierärztliche Wochenschrift* which is resumed by Panisset. "It is generally admitted that contagious vaginitis is a specific disease attributed since the researches of Ostertag, to the action of streptococci. This definition is not sufficient nor clear as the same symptoms of vaginal inflammation may appear under more different causes, either infectious or traumatic. The formation of nodules resulting from the inflammation of the vaginal mucosa, is not characteristic of contagious vaginitis. This notion of specificity has made it to establish a relation between coital exanthema and contagious vaginitis; but the researches of Zwick and Gminder have proved that they were two distinct diseases.

If the nodular inflammation is to be considered only as a reactive method of the vaginal mucosa and no longer as a specific sign it is easy to understand how vaginitis is not always a primitive disease, but the consequences of other affections, amongst which those of the uro-genital tracts play a first part.

It is thus explained why pyelo-nephritis, cystitis, uterine diseases, retained placenta are often followed with a symptomatic exhibition, identical to contagious vaginitis. It results then, that oftener than it is generally admitted, vaginitis is the consequence of an affection of the uterus, rather than this last being the cause of the first.

Rautmann examines also the question to know why domestic

species, other than bovines, do not present nodular inflammation of the vagina. In particular, with sluts and mares, where catarrhal inflammation of the vagina are easily transmitted, no nodules are to be found. It is, no doubt, because the lymphatic elements that give rise to them are of too small dimensions (ewes) or protected by a mucosa, whose characters are like those of the skin (sluts) and these conditions prevent the reaction, so noticeable in cows. Hauptmann and Juterbock have described a contagious vaginitis of sows; Rautmann does not believe that it is an affection similar to that observed in bovines and he thinks that the noticed nodosities, resulted from an alteration in the vestibular glandiols.

After passing in review all of the causes likely to promote abortion, the author asks himself if truly a localized affection like contagious vaginitis can bring about the uterine contractions, which would end in the expulsion of the fetus, so much so that in Saxony notably, there is no great establishment, which is free from vaginitis. Observation is in favor of that opinion. Vaginitis, for instance, may affect a great number of animals, without any abortion taking place. The so frequent vaginitis of sluts is never accompanied with abortion. An ascending uterine infection cannot be taken into consideration and bacteriological researches have already shown the uterus sterile in the neighborhood of the vaginal flora. Abortion that complicates vaginitis is most often the consequence of the vaginal therapeutics, which ought to have protected the animal against complications. It is sufficient to watch animals making expulsive efforts, after the use of some irritating agents to understand the true cause of the expulsion of the fetus.

Rautmann does not either admit that sterility is the consequence of contagious vaginitis, contrary to the opinion admitted, without any reason by all breeders. The same arguments can be advanced and notably the observation of normal conceptions in the centers, where vaginitis prevails.

The non-conception may be the consequence of the irritation, due to the inflammation and oftener to the treatment; under the

influence of the pains of the female, coitus is imperfect, the sperm instead of being introduced in the uterus, is ejaculated in the vagina, where it is destroyed in its contact with the vaginal mucosa.

The best proof of this theory is in the remedy advocated by Rautmann to overcome sterility. The vagina is washed with alum or soda solution at 1 or 2 per cent., coated with oil or grease and the animal bound round with a rope to keep her from making expulsive efforts. In such conditions conceptions always take place regularly.

After demonstrating that the etiology of vaginitis is not yet known, that abortion is not a sequela of vaginitis and that sterility cannot be considered as a specific consequence of the affection, Rautmann does not believe it necessary to insist upon the economic importance of the treatments advocated to-day.

It is not necessary to fight this affection with sanitary measures or to undertake systematic treatment of all the sick animals. A treatment is only essential, if the local state of irritation may bring sterility; in animals in gestation abstention is the best rule. As to an interference against chronic inflammation to avoid its extension to the uterus, Rautmann considers it as theoretically illogical in its object.

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HOG CHOLERA: I wonder if there remains amongst our readers any one who remembers how, many years ago, this subject had given rise to much writings and controversies. And if there are, if the names of two at least of our departed confrères will come to their minds, those of Drs. Salmon and F. Billings. The discussions were hard, sometimes too much so, and yet the question made but little progress, until at last it has been comparatively recently proven that at last the true pathogeny of the disease was found and accepted. But still if it is well demonstrated that hog cholera is due to the *Spirochaeta Suis*, inquiries are not for that, left aside.

The Research Laboratory of Parke Davis and Co. has workers, from whom much valuable information is sent to the scientific world, and even finds its way in my studios.

A reprint from the *Journal of Infectious Diseases* has brought me one of their last publications. It is headed *Spirochaeta Suis—Its Significance as a Pathogenic Organism*. It presents the studies that have been carried out by Drs. Walter E. King and George L. Hoffmann, where are resumed into a concise pamphlet, illustrated with a few photos, colored plates and maps of the temperature of the various subjects of their experiments; and they close with valuable conclusions.

"*Spirochaeta Suis* is an organism found in the intestinal ulcers, crypts in the cæca and external lesions of animals, suffering from hog cholera. It is a typical spirochaete, simulating in many characteristic *Spirochaeta Pallida*, *Spirochaeta Gallindrum*, and other forms, whose morphiology and life history are becoming better understood.

Spirochaeta Suis appears to be capable of breaking up into granules and these granules may play an important part in the life cycle and pathological functions of the organism. They are present in the blood of cholera hogs, in cultures of *S. Suis* and are capable of producing the disease in healthy hogs.

In the blood of hogs suffering from cholera, the presence of a relatively large spirochaete in small numbers, has been recognized. As this organism has not been found in the blood of normal hogs it may represent *Spirochaeta Suis* in a transitional form. Its morphological variations from *S. Suis*, as found in ulcers and local foci, may be due to the unfavorable action of the blood, as a medium, or to its natural processes as a part of the life cycle of the species.

Spirochaeta Suis is an obligatory anaerobic organism and usually requires several weeks' incubation for growth to take place on artificial culture medium. It may be transferred from generation to generation on artificial culture medium. Cultures containing the organism in the form of granules and spirochates may be passed through bacteria-proof filters and the spirochates

removed; the few small granules which pass through, being capable of producing hog cholera or resistance to the disease.

Spirochaeta Suis is capable of producing typical hog cholera, when injected into healthy hogs. This is true, not only of contaminated cultures, made directly from the intestinal ulcers of cholera hogs; second and third generations on artificial cultures media, containing the *S. Suis* as well as the Berkefeld filtrates of the same, transfers, are capable of producing hog cholera and marked reactions, which confer more or less protection against the disease. The pathogeniety of these cultures does not appear to be due to the passage of an unknown "invisible micro-organism," which is finally transmitted to healthy hogs by inoculation.

Control experiments tend to show that the pathogeniety of the cultures of *S. Suis* is due to the species itself in the form of spirochaetes or granules.

Finally in those hogs that receive the disease from cultures of *Spirochaeta Suis* the organism is present in the intestinal or the local external lesions, as demonstrated by the dark field examination.

From the above results which have practically fulfilled Koch's laws, in so far as it is possible, with an organism possessing the biological characteristics of Spirochaetes, it may logically be concluded that *Spirochaeta Suis* is more nearly established as the specific cause of hog cholera than any other known organism.

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ANTI-HOG CHOLERA SERUM: The serum treatment has found in Tennessee an eminent advocate, Dr. Geo. R. White, the state veterinarian, who has favored me with the *Bulletin*, issued by the Department of Agriculture, which is handsomely illustrated by plates showing choleric hogs, intestinal lesions, the guilty turkey buzzard, the great disseminator of hog cholera in the Southern States and then several views of the anti-hog cholera serum plant of Nashville, etc., etc.

It gives also valuable information to be followed, before undertaking vaccinating a hog; it shows how to proceed, gives

directions for vaccinating, the after treatment, etc., and finally concludes: "In this great fight of science against hog cholera, science will prevail and hog cholera will be as surely conquered by anti-hog cholera serum and modern sanitation as night follows day." The slogan would be: "*All pull together for the eradication of hog cholera.* When science and efforts have caused hog cholera to vanish from the confines of the Volunteer State, then we will be a happier, better fed, more prosperous and better contented people."

The Bulletin ought to go everywhere, where hog cholera may prevail, its directions ought to be followed and the predictions of our worthy confrère may be realized.

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AUJESZKY DISEASE AGAIN: This has been the subject of a long portion of my chronicle for last December. Yet there were points, which it could be noticed, had been left open for further consideration. And it was not without some pleasure that I found an extract from an article of Prof. von Ratz taken from the *Zeitschrift für Inspektionskrankheiten und Hygiene der Haustiere*, reproduced in the *Revue Generale* on the *Reception of Animals for Infectious Bulbar Paralysis*, where it is said:

"The observations gathered until now show that the most susceptible animals for infectious bulbar paralysis, are dogs and cats, although the disease is not rare in bovines. This sensibility has been studied in other animals by Schmiedhoffer and by Zwick and Keller. Their experiments have demonstrated the receptivity for horses and sheep.

Wild animals have been used but little—a porcupine by Aujeszky and a young fox by Kern were successfully infected.

The condition of the receptivity of rabbits, guinea pigs, mice and rats have also been well determined.

To complete these observations, von Ratz reports new facts, which establish that infectious bulbar paralysis may manifest itself in the natural condition of life of wild animals, carnivorous and of pigs.

St. von Ratz had the occasion to make the autopsy of a dog, that had died after having exhibited symptoms, which could be easily assimilated to those of infectious bulbar paralysis. Inoculation confirmed the diagnosis. In this country, where this dog came from, a certain number of foxes died in the month preceding the apparition of the disease in the dog, and after having shown signs which seemed to indicate, that a single and same disease was present.

The *post mortem* of a fox permitted the discovery of hairless spots on the left cheek and the inoculation of the bulb to rabbits gave a positive result. With the spinal marrow from a blaireau, whose cadaver presented nothing abnormal, the inoculation was also positive. The observations of Kern upon the receptivity of foxes are confirmed and those new researches show besides the receptivity of the blaireau.

Infectious bulbar paralysis had existed among several pointer dogs of a hunting farm and von Ratz was told that boars were dying with a disease resembling much the affection that killed the dogs. Nothing abnormal was found at the *post mortem* of one of the boars, but inoculation proved that surely it was infectious bulbar paralysis that had killed it.

St. von Ratz was not slow to obtain the proof that pigs could also be affected with Aujeszky's disease. It was in an animal, one and one-half years old, which was not sick long enough to be examined by a veterinary surgeon. The disease had begun by symptoms of agitation, then the pig went about, biting all surrounding objects, he had epistaxis and showed himself aggressive to man and other animals. He was suffering with constant itching also. The disease lasted 30 hours and death took place with paralysis. At the autopsy only congestive lesions were found, but inoculation proved the true nature of the disease, *viz.*, infectious bulbar paralysis.

Two observations are recorded by von Ratz which demonstrate that man is not entirely refractory to the disease. He relates that two individuals, one was pricked and the other cut himself, in manipulating products, which had been soiled with virus.

The third day, in both cases, there was swelling, redness, heat and itching of the parts. These manifestations lasted 24 hours, but ultimately recovery followed as cicatrization of the wound went on.

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TETANUS: At the present time of war, the question of the treatment of that terrible sickness is occupying the attention of surgeons and articles are found, which recall all the interesting points, relating to lockjaw. Our excellent contemporary, the *Veterinary Journal*, in its issue of November, reproduces a long article on the *Prevention and Treatment by Means of Antitetanic Serum* by Alfred MacConkey, Bacteriologist of Lister Institute of preventive medicine.

It is an excellent review of the subject, where the history of the disease is presented, with the many points relating to the bacillus, its distribution and cultivation. This is followed by a few lines on the production of the toxine, that of the antitoxine and then the prophylactic use, the dose, the curative use and value. The modes of administration and the influence of the method employed are also considered. Idiopathic tetanus and preservative by the serum, end the article with conclusions from which valuable indications are drawn, already known statements confirmed, and an important question offered.

“Tetanus may be cured by the administration of antitoxine, provided that the serum treatment is begun early in the attack and is pushed vigorously and continuously. Unfortunately in the present state of our knowledge, a diagnosis is as a rule, made only, when the disease is in a stage so advanced, as to make the results of treatment uncertain, even though very large doses of antitoxine are used. These large doses are costly and place the serum treatment of tetanus practically out of the reach of those with small purses unless of course the serum is provided by the State.

“But in the prophylactic use of serum, there is within the reach of every one a means of checking the disease. It has been

proved beyond the shadow of a doubt, that whenever the prophylactic use of antitoxine has been carried out systematically tetanus may be said to have been prevented.

"Tetanus should therefore be looked upon as a preventible disease; and when one realizes this, there flashes across the mind the memorable question, 'if preventible why not prevented?'"

We veterinarians answer: it is prevented with our patients!

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In the meantime, records of cases treated by various treatments are published in some papers. For instance, the *Presse Medicale* (by the way, the only medical paper that is printed here now), I find a long relation of the treatment by carbolic acid from the pens of two physicians, who give the history of six cases treated by the method of Bacelli. All six cases having recovered. Chloral was also administered in various doses. Yet antitetanic serum added to the treatment of carbolic acid did not seem to prove of any advantage.

There are again interesting communications, which I read of in the bulletin of the *Academie des Sciences*, where are related two cases treated with the same Bacelli's method and of two very severely taken, who received besides intravenous injections of Rhodium; these four cases got well.

The tendency seems to be much in favor of the treatment by carbolic acid as Bacelli recommends it.

No doubt more cases will be reported on the subject from physicians at least.

To close to-day on the subject of tetanus, I will mention a peculiar method, which if not applicable with our animals is nevertheless curious in its application in human medicine.

It refers to the treatment of tetanus by intra-rachidian injections of antitetanic serum in large doses, followed with the reversing of the trunk in position of bulbar declivity.

This is the technic of Dr. Doyen.

"As soon as tetanus is confirmed, a lumbar puncture is made and followed by an injection of 60 centimeters of antitetanic

serum. Immediately after the patient is placed on his back in such a manner that his head is kept lower than his pelvis and his vertebral column be inclined at about 45 degrees. This position of bulbar declivity is kept up for 10 hours, so as to obtain the complete diffusion of the serum in every one of the arachnoid spaces.

The normal position of the patient is then resumed. Generally improvement is manifested the next day. Forty-eight hours after a second injection is made with 40 centimeters of serum, after another lumbar puncture. The patient is again placed in the reversed position, head lower than the pelvis. After that the same dose will be repeated every 48 hours, if the symptoms do not subside sufficiently. Two or three injections are generally sufficient. The wound is also treated as indicated. Chloral being used as required.

I shall probably have more to record on the various treatments of tetanus, especially as soon as medical publications are started again.

A. L.

THE 1915 MEETING OF THE A. V. M. A. TO GO WEST.

Fate having decreed that there was to be no 1914 meeting of the A. V. M. A., and the sacrifice having been made in a good cause, and in a manner befitting members of a profession accustomed to putting duty first and desire afterward, the question of a meeting place for the 1915 convention now confronts us.

That the association will go west and not south, has been definitely settled, but how far west, and at what time, are the questions that still remain unanswered at the time of this writing. The last tidings we had received was, that out of a total of 859 votes cast for the two places who have so cordially invited the American Veterinary Medical Association to meet within their borders, *i. e.*, Kansas City and San Francisco or adjacent cities, 431 were in favor of Kansas City, and 428 in favor of California. It would seem, however, that that vote was only taken to get an expression from the members, and that the real question at issue is to be decided by the executive committee. From the result of

votes cast by the members, it would seem that whichever way the executive committee decides, it will meet the views of about one-half of the membership, and there is no question but what the other half will also be satisfied with the committee's decision, as it is a matter which is always decided by the executive committee and the officers—members *ex officio*—and usually meets general approval.

THE 18TH ANNUAL MEETING OF THE U. S. LIVESTOCK SANITARY ASSOCIATION was held at Chicago, Ill., with headquarters at the LaSalle Hotel, on February 16, 17, 18, 1915.

The meeting was well attended and great interest was centered in the question of Foot and Mouth Disease. A very able paper was presented by Drs. Melvin and Mohler on this subject.

This paper and the discussion that followed will be given in detail in our next issue. For resolutions passed, see page 677.

SOME OF THE ARTICLES THAT WILL APPEAR IN THE APRIL ISSUE: The second section of Drs. Eichhorn and Marshall's story of the *Official European Tour of the A. V. M. A., Some Observations on Hog Cholera and the Uses of Serum*, by Prof. H. Preston Hoskins, University of Minn., *Iron and Arsenic Hypodermically*, by Dr. G. H. Conn, Prairie Depot, Ohio, *Foot and Mouth Disease*, by Drs. A. D. Melvin and J. R. Mohler, Washington, D. C., *Dissemination of Typhoid and Its Prevention*, by Dr. O. C. Newgent, City Veterinarian, Terre Haute, Ind., and *For Better, For Worse*, by Dr. Charles H. Duncan, New York, N. Y.

NINTH CHAPTER OF ALPHA PSI FRATERNITY ESTABLISHED IN VET. D. OF M. A. C.—On Saturday evening, February 20, 1915, the Iota Chapter of the Alpha Psi Fraternity was installed in the Division of Veterinary Science of the Michigan Agricultural College, at East Lansing. The new chapter was organized with eight charter members, and is the ninth chapter in the Fraternity. The installation ceremonies were conducted by Dr. H. Preston Hoskins, of St. Paul, Minn., Secretary of the National Council. He was assisted by Drs. R. P. Lyman, J. S. McDaniel, J. P. Hutton, and E. T. Hallman, all of the teaching staff. A banquet followed the installation ceremonies.

ORIGINAL ARTICLES.

REPORT OF THE OFFICIAL TOUR OF EUROPE OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION TO ATTEND THE INTERNATIONAL VETER- INARY CONGRESS AT LONDON, 1914.

BY ADOLPH EICHHORN, WASHINGTON, D. C., AND C. J. MARSHALL,
PHILADELPHIA, PA.

The tour of the American veterinarians was undertaken in connection with the attendance of the tenth International Veterinary Congress. In its arrangement it was deemed advisable to provide a visit to the different European countries, giving the members the opportunity of familiarizing themselves with the veterinary organizations, colleges and institutions of those countries. Likewise, the sight-seeing advantages were also given due consideration, in view of the fact that such a tour cannot be undertaken by busy practitioners only upon such exceptional occasions.

All necessary preliminary preparations had been made several months prior to the departure of the party in order to assure all the customary courtesy and attention which are essential in the arrangements for a successful trip. In this regard, material assistance was obtained from the State Department, which, through its diplomatic and consular service, paved our way in all countries for delightful visits and unexpected pleasures. As stated, the primary object of the tour was to study and familiarize the members of the party with all methods of interest pertaining to veterinary science; and, in fact, everything which might prove of interest to American veterinarians.

The tour was an extraordinary success, and the sentiment of every individual member of the party was general, in that it turned out above our expectations, not only from an educational standpoint, but also from the side of pleasure. A member of the

party has rightly voiced the sentiment of the entire party in saying that he was an hundredfold repaid for the expense of the trip. The success, however, cannot be attributed to personal efforts. The honor shown us everywhere belonged to the American Veterinary Medical Association, which, at its last annual meeting, decided to make the tour an official one of that organization. At no time during the history of the veterinary profession of the United States has there been a similar tour undertaken, and there is no doubt that this fact was greatly responsible for the many courtesies which our party received from our professional brethren, municipalities, and governments in all countries that were visited.

The personnel of the party consisted of fifteen veterinarians from different states of the Union, some being private practitioners, and others connected with scientific or state institutions. Four members were fortunate in having their wives accompany them, and this added to the cheerfulness and good behavior of the whole party.

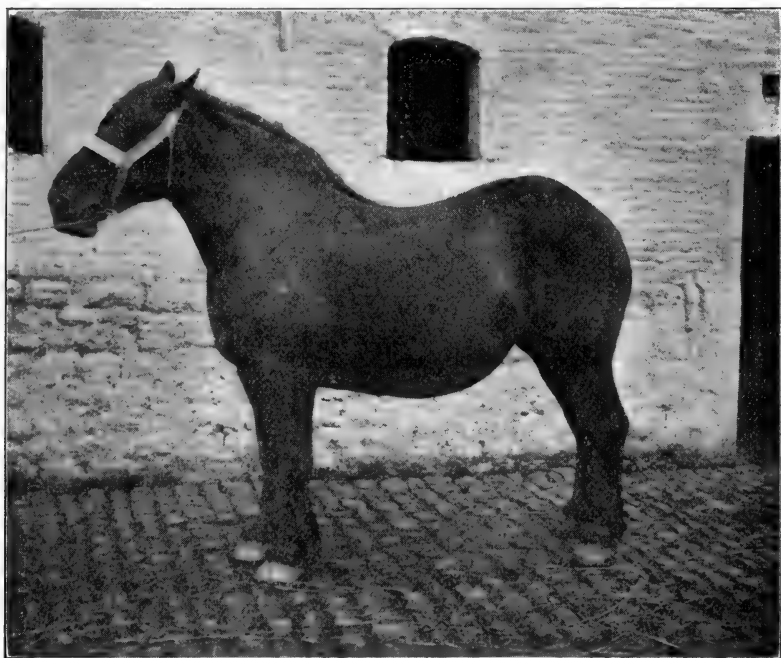
Our happy party sailed from New York on June 13, 1914, on the steamship "Finland," for Antwerp. It was a great pleasure to all members of the party to note the familiar faces of our professional brethren who came to see us off, and especially to those who came from distant points of the country and could not have their dear ones to wave their last good-bye at our departure.

The trip on the "Finland" proved delightful to all. Seasickness was unknown among the members, and the time was given to the ordinary pleasures which are characteristic of ocean voyages. "Shuffle-board" was the principal game. Well contested games were played daily by teams of our party, and the efficiency of the playing of some of the members attracted remarkable attention among their fellow passengers; to such an extent, in fact, that a championship game was organized between them and our party, which of course, terminated in a victory for our side. Brothers Day and Fraser were the heroes of the hour. The unattached members of our party found ample recrea-

tion all through the voyage in helping to pass the time away with the lonesome, pretty and intellectual young ladies, and we are not yet certain whether some of these acquaintances have not culminated in serious romances.

ARRIVAL AT ANTWERP.

After discharging the passengers booked to disembark at Dover, we proceeded to Antwerp and arrived there well rested



Champion Belgian Brood Mare.

and ready for hard work early in the morning on June 23. At the pier we were met by the Director General of Agriculture of Belgium, the Hon. Paul Devuyst, who arranged for our regular program during our short stay in Belgium. It was indeed fortunate for our party to have the congenial director with us, since through his influence and personal attention we were shown the best in the limited space of time we had at our disposal.

At Antwerp the Zoological Garden was visited and admired by all. The collection of animals, and particularly the arrangement of the buildings, are unique, and everyone was well repaid for the visit. The cathedral of Antwerp is, of course, one of the great attractions of that city, and the wonderful paintings of Rubens, especially the altar piece, will long remain as the most wonderful exhibition of the painters' art in our memory.

A striking feature on the streets of Antwerp to the members of our party were the numerous heavy draft horses used in the draying of the tremendous produce entering and leaving that seaport. They were all of the Belgium type, and in the finest of condition.

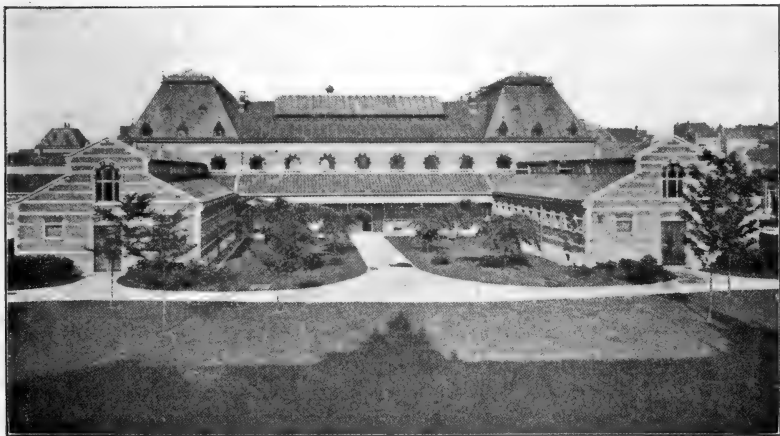


Brussels, Belgium, City Hall Square.

ARRIVAL AT BRUSSELS.

After the short ride from Antwerp to Brussels, we got located in our hotel, and after a well-deserved dinner, proceeded to a visit of the Veterinary College. The Veterinary College of Bel-

gium is one of the most modern institutions of Europe. The opening exercises were held in 1910, on the 14th day of August, in the presence of the Minister of Agriculture and Public Works and numerous representatives of foreign governments. Among those were Chauveau, the Inspector General of the Veterinary Schools of France, Lydtin, President of the permanent Interna-



Clinic for Large Animals—Belgium Veterinary College.

tional Commission of the Veterinary Congress, Danman, Director of the Veterinary School of Hanover, Schimmel, Director of the Veterinary School of Utrecht, Arloing, Director of the Veterinary School of France, Barrier, Director of the Veterinary School of Alfort, Hutyra, Director of the Veterinary School of Budapest, and numerous other celebrities of the veterinary profession of the different countries of Europe.

Professor Dupuis is the present Director of the Veterinary College, and upon our arrival at the College, we were escorted to his private office, where he greeted us in the name of the faculty of the institution with the most cordial welcome. We were introduced to all members of the faculty and then proceeded to the inspection of the school. The College consists of numerous buildings, each branch of study having its own building. Since the College was built only about four years ago, it is natural

that the buildings are modern and furnished with up-to-date equipment. The cost of the College was \$800,000, and \$70,000 is provided annually for its maintenance. There are ten professors and a number of assistants. The number of students is rather small, but in consideration of the size of the country and the long training required to complete a veterinary course it is surprising that the attendance is so large. High school graduation, two years' training in the natural sciences at the University, and a four-year course at the Veterinary College are the requirements for the education of a veterinarian. It certainly surprised the members of our party when comparisons were made with the requirements for a veterinary education in the schools of America. The buildings and facilities are found to be splendid, and the laboratories well provided for the pursuance of the studies. The lecture rooms were well lighted, and many of them provided with projectoscopes. The professors and assistants devote their entire time to the teaching and research work in their respective branches, which, of course, is a material factor in the progress of such an institution and also in the facilities for the student to get the best education obtainable.

After being guided through all the different departments, among which the hospital for large and small animals proved especially attractive, the party was taken to the offices of the Director, where a splendid buffet luncheon, with an assortment of wines and champagne, was served. The customary speech-making was indulged in, Director Dupuis expressing his great pleasure at having our party of veterinarians visit his institution, to which Dr. Eichhorn responded with appropriate remarks.

For the evening the Director General of Agriculture invited the party to his house, which proved especially pleasurable to all, since it afforded the members an opportunity to obtain a glimpse into the Belgium home life. Mr. De Vuyst took us to his home, and we were all greatly pleased with its sensible and tasteful furnishings. The most interesting part of the house was the chil-

dren's room. Here a sort of counter was provided, equipped with scales, and we were told that the children kept account of all material, including food, which came to the house. They were allowed to charge ten per cent. profit for their services. Everything is conducted with a view of giving the children the best home education. He is a great advocate of this kind of training, and has accomplished wonderful results all through Belgium in the line of domestic economy. In the house there were many pictures and other conveniences for bringing knowledge to children in a vivid way. Back of the house was a neatly kept garden, with a great variety of plants. Each was labeled with its common and scientific name. The children were playing in the garden, and



Clinic for Small Animals—Belgium Veterinary College.

had the opportunity of learning the names of the different plants. An excellent dinner followed, the striking part of which was the great variety of wines served. Mr. De Vuyst is a wine connoisseur, and before the dinner was finished each of us who had any desire had five or six wine glasses of different sizes and shapes around his plate. After dinner coffee was served in the smoking

room, when opportunity was given us to learn from Mr. De Vuyst all the details relative to the working of the Department of Agriculture and the wonderful advancement which has been achieved in that small country in this regard. Mme. De Vuyst proved a charming hostess, and the only regret we felt was that we were not able to converse freely with her and express our heartfelt thanks for the successful manner in which she made each of us feel at ease and at home.

THE AGRICULTURAL COLLEGE OF GEMBLOUX.

Accompanied by several members of the faculty of the Veterinary College, our party visited the Agricultural College at Gembloux on the following day. This is located about twenty-four miles from Brussels. A part of the way we went through the glass-house district, the Government Forest, and the farming district of Belgium. Upon our arrival at the station we were met by the director and several professors of the Agricultural College. The main building of this institution has been converted from a monastery into the present institution. The equipment appeared very satisfactory, especially the beautiful collection of everything that grows or exists in Belgium—case after case of taxiderma, parasites, plants, foods, vegetables, etc. The equipment of the laboratories impressed us as being somewhat above the ordinary. Outdoors there was a fine botanical garden, and also plots for experimental work.

About 150 students attend the Belgium Agricultural College, and a great number of these are foreigners. The collection of animals did not impress us as highly as the institution itself. The stables were unsanitary and not kept up as would be expected in a scientific educational institution. The horses were of the Belgian type, and Holstein graded cattle were principally represented in the barn. The hogs were fine, the hog-pen being of stone and cement and much cleaner than the cow stable. The small pigs were kept in the pen, and the sows were out in the lot and allowed in only at feeding time. The farm machinery appeared rather crude. Nearly all hay is cut and gathered by hand.

Wagons, plows, harrows, grain drills, manure spreaders, etc., were about three times as heavy as necessary and could be handled only by the heavy Belgian horse so common in that country. A fence is seldom seen in Belgium. They are no wooden buildings; even the roofs being of tile and slate. Most farm buildings are brick. They are small, but there are no dilapidated buildings. There is always plenty of rain in Belgium. Vegetation has a



Agricultural College at Gembloux, Belgium.

beautiful deep green hue. The land appears very fertile. In all places the dwarf fruit trees appeared to be very popular. They were trimmed in different shapes, some resembling candelabras and others being trained to the brick walls.

Most of the veterinarians in Belgium are employed in one way or another by the Government. Those in private practice have no fixed price for visits, the average being about forty cents. An extra charge is made for operation and medicine.

There are two chief government veterinarians, one in charge

of meat hygiene and the other in charge of the sanitary police. The country is divided into nine districts. There are two deputy veterinarians in each district. All licensed veterinarians in Belgium are required by law to report all transmissible diseases, including tetanus, to the mayor of the city or to the district deputy. The district deputy reports to the police, who orders the quarantine. The deputy sees that the quarantine is observed. No live hogs are permitted to enter the country. Horses must be mallein tested. Cattle are tuberculin tested in quarantine, examined physically, and held for ten days before they are permitted to go to their destination. Those which are rejected may be killed or returned to the state or country from which they originated. All veterinarians are permitted to make mallein or tuberculin tests. Such tests must be reported. The owners can do what they please with the reactors. An indemnity is allowed for a physically affected case of tuberculosis. The owner is not compelled to destroy the animal, and may keep on selling the milk of such cow, or sell her, as he pleases. They are aiming now to stop paying indemnities and spend the money for making free inspection and tests. All dogs in Brussels and Antwerp are required to be muzzled. The muzzle employed must be approved by the Department of Agriculture. None other will do. The period of quarantine for dogs is sixty days. We were told that Belgium is free from hog cholera. As previously stated, live hogs cannot be brought into Belgium. Watering troughs are not used, and the horses are watered from buckets.

The number of dogs used for drawing carts was a striking feature to us. They were used in milk carts, hucksters carts, etc.

A few hours were spent in carriage rides and sight-seeing the city. Brussels, to all visitors, is beautiful. There are monumental buildings, among which the Royal Palace and the Palace of Justice impressed us with their grandeur. Brussels, like many of the larger European cities, is provided with cathedrals and churches, which, architecturally, are considered wonderful and striking representations of the ages of their construction. Some of the members of the party undertook an automobile trip to the

battlefield of Waterloo, about sixteen miles from Brussels, which, at the present time, consists mainly of fertile farms and thriving villages. There are several monuments erected on the battlefield in commemoration of the great struggle of past history, the most impressive, without a doubt, being the English Lion, erected on the top of a huge pyramid covered with sod. All dirt used in the construction of this pyramid was brought by the widows and orphans of the unfortunates who lost their lives in the great struggle on that battlefield. At the base of the pyramid a panorama has been erected and maintained by commercial enterprise, which vividly portrays the fall of Napoleon. It is composed partly of a panoramic painting and partly of plastic objects, in which the artist's work is so carefully executed that it is almost impossible to see where the plastic parts merge into the painting.

ARRIVAL AT PARIS.

After parting with most delightful impressions of the charming and impressive city of Brussels, we boarded one of the express trains for Paris. The country we traversed was principally fertile farming country, and the farmers seemed to be busily engaged in attending to the great amount of work involved during that time of the year. No one would ever have thought that within the short space of a month the whole country over which we traveled would be visited by the greatest calamity of all ages and be the stage for the struggles of war between the foremost and erstwhile peaceable nations of the world. Passing through Liege we only gained a glimpse of the great fortifications which proved to be the first point of contact between the contending nations, and as our train rushed on at the rate of sixty miles an hour and the approaching darkness forbade further enjoyment of the beauties of the peaceful farming activity, we devoted our time in discussing phases of the observations we had made in Belgium relating to our profession. After indulging in the first dinner in a dining car, which amply satisfied our wants, we soon arrived in Paris and got our first view of this great city.

Railroad traveling in Europe cannot be well compared with

travel in the States. The distances, as a rule, are not so very long, and the cars are not as comfortable. Each car is divided into compartments for six or eight passengers. A corridor runs along the entire length of the car and the doors lead from the compartments into the corridor and out upon the platform at the



Claude Bourgelat, Founder of Veterinary Schools.

stations. Such an arrangement, of course, was very pleasant for our party, since by engaging always a sufficient number of compartments to accommodate us comfortably, we had the advantage of being always together and able to exchange our views on different topics. The cars are much lighter in weight, and therefore in the fast traveling train the jolting and jarring is much greater than in traveling in the States.

The first impression of Paris, with its bright illumination, uniform skyline of buildings, broad boulevards and streets was very pleasing. And while it was rather late in the evening, nevertheless after some of our youthful members had been assigned to their rooms in a very comfortable hotel, others did not lose any time in getting acquainted with the noted gay life of that city. They, however, soon realized the disadvantage of not being able



Entrance to Veterinary School—Alfort.

to speak the native language, and insisted that the director of the party act as their guide in their initiation. Most of the members soon became very apt in locating the famous gay places, and in future night excursions no longer required any guidance.

THE VETERINARY SCHOOL OF ALFORT.

The stay in Paris was very profitable from our professional standpoint. We were shown the utmost courtesy in all institutes we visited. The noted veterinary school of Alfort was located about ten miles from our hotel in Paris. The school is an old,

but a substantial-looking place. The various buildings are located amidst nice parkings, and it is a pleasing sight to the eye as one enters and is confronted by the Court of Honor, which contains the statues of the great pioneers of the veterinary profession. The statues are those of Nocard, Bourgelat and Boulay. The different departments of the veterinary institute are arranged around the court.

At the entrance of the school we were met by Professor Vallee, Director of the College, and most of the members of his



The Faculty, Veterinary School, Alfort—Director Vallée, Third from Left, Seated.

faculty. We were also fortunate in meeting there Mr. Minett, from the Royal Veterinary College of London, who has been doing post-graduate work at the laboratory of Professor Vallee. The presence of Mr. Minett was a great advantage to our party, since his interpretation aided us greatly in obtaining information in the different branches of veterinary education as practiced at Alfort.

The students at Alfort live in dormitories provided by the government, and are under a strict discipline. Their close association with the institution serves as a splendid advantage in their veterinary training, since it gives them an opportunity to spend

most of their time observing cases in the hospital, in utilizing the facilities of their wonderful museum and also the libraries of the institute. The City of Paris offers wonderful clinical advantages to the veterinary college, and judging from the covered court in which the clinics for large animals are held a very great number of patients are received daily for treatment. Four operating tables are provided in this court for operations, which are performed by students under the guidance of the professors. The court is paved with cement block. In front of the court is a nice lawn which is surrounded by a wide path covered with tanbark, which is used for exercising horses. Dr. Caviot, professor in surgery, showed us some of his cases. Many of these horses had recently been operated on for roaring. He uses no anesthetic in this operation and always operates on both sides. In castration he still employs the clamps. When asked why he still followed this old method he replied that it never gave them any bad results, therefore he saw no advantage in discarding it.

The lecture rooms in the different departments of the institution are very roomy, well lighted and splendidly equipped for the comfort of the students. Of special interest to the party was the building used for pursuance of the study of infectious diseases. These were planned by Nocard, principally for the study of foot and mouth disease. Their construction is such that perfect isolation may be practiced, as the animal may be fed, watered, etc., without it being necessary for the attendants to enter the room. At the present time this building is being used for the study of canine distemper, the object being to establish the etiological factor of this disease.

The bovine clinic is located a short distance back of the horse clinic, and there is an ambulance to bring cattle to the hospital. In the same building are also located the stables for goats, sheep and swine. They aim to furnish the student with material in the study of bovine, porcine and ovine diseases, although the material must be somewhat limited in these lines. Their library contains about 20,000 volumes and a complete collection of all the periodicals in the veterinary and medical profession. Special labora-

tories are maintained for students who wish to carry on special studies in certain lines. These laboratories are small, and only fifteen men are allowed this privilege, and they represent the fifteen students who have obtained the highest mark in the examination for that particular branch. The botanical gardens are very fine and contain nearly all kinds of poisonous weeds, plants, medical plants, foliage plants, etc. The college ground covers about eighteen acres. Some of the members of the faculty live on the college premises. The students of the institution pay



The Consultation—Veterinary School, Alfort.

\$120.00 per year, which, of course, includes board and lodging as well as the tuition. It costs the French Government \$2,000 per year per student. The number of students per year are limited to fifty. They have many more applicants than can be accommodated. The entrance requirements are practically the same as at Brussels; that is, high school graduation, two years' study of natural sciences at the university and then four years at the veterinary school.

The museum, without doubt, is one of the finest in the world.

Anatomical preparations of over one hundred years of age in perfect condition may be seen in the collection. But particularly wonderful is the collection representing various organs in disease as compared with the natural condition. For instance, the spleen of an animal affected with anthrax is shown alongside that of a normal spleen of the same species of animal. These preparations are perfect as to their coloration and changes which the organs undergo in the course of the various diseases. It would be almost impossible to describe the collections of this museum, as it would require more space than can be given to this report.

Following the inspection of the college the members of the faculty escorted our party to a shaded place on their grounds, and there we met the ladies of the members of the faculty and partook of a beautifully arranged and delicious luncheon. Champagnes and other wines were served, in addition to the cold buffet luncheon. Before beginning the repast Professor Vallee addressed our party, which, translated by Mr. Minett, was as follows:

“Dr. Eichhorn, Ladies and Gentlemen: To me it is a great happiness to have to-day the honor of receiving you in almost the oldest veterinary college in the world. My colleagues on the teaching staff, together with a number of our students, have joined me in bidding you welcome. It is on behalf of all at Alfort that I express to you our most cordial sentiments and recite you all the joy and honor which we feel at your visit. There is only one shadow to our happiness to-day, that is this, that we have not with us the eminent Professor Liautard—a man who distributes in equal measure his devotion to his mother country and to your great country. We join with you in wishing that the re-establishment of his health may not be long delayed. Indestructible bonds of esteem and affection unite our nations, proud of their liberties, conscious of their worth and at all times striving after evolution and progress. And it is to us particularly agreeable to express the regard which we have for the American Nation, its institutions and its veterinary profession. As members of the latter body, I will especially mention Salmon, Melvin,

Mohler, Eichhorn, Van Es, Moore, Marshall, Cotton and Williams. It is only brevity which compels me to limit myself to these.

"Let us hope that you will carry away with you pleasant recollections of a visit, the simplicity of which only equals the cordiality. If the Alfort School, already 150 years old, has shown you in parts an organization which is not luxurious and at all times insufficient, it can at least hope to be worthy of the veterinary profession by the spirit and devotion of the savants who have taught here.

"Permit me now to wish prosperity to American veterinary science, glory to its institutions and to its men of learning and health and success to all its members. And will the ladies who grace our presence be so good as to accept with our respectful homage our best wishes for an agreeable sojourn on European soil."

Dr. Eichhorn responded to this address of welcome in a few chosen remarks.

ABATTOIRS AND STOCKYARDS OF PARIS.

The meat supply of the City of Paris is obtained principally from the abattoirs of La Villette and Veaugirard. Both establishments are managed by the municipality of Paris. The meat inspection as well as the sanitary police work is in the hands of city veterinarians with a director in each establishment with full administrative powers.

Our party visited only La Villette, since the other establishment is conducted very much on the same lines. The grounds of La Villette, which are located within the city limits, comprise about ninety acres, and both of the stock yards, as well as the abattoirs are located on these premises. The yards contain four very large steel frame sheds open on all sides and well lighted by glass in the roof. All floors of the buildings are of stone and concrete. The cattle shed is the largest and has a main alley through the center, and is divided by passageways into smaller units. On each side of the passageways are many pens which

are divided by heavy iron pipes set in iron posts. Cattle are tied by their heads side by side in these pens.

The capacity of the cattle shed is about eight thousand, and on market days is frequently filled to its limit.

The sheep building is similar to the cattle shed with the exception of smaller pens and the division of the pens also is somewhat different. The pens are made of ordinary ladders about two feet wide. The ladders are turned upon their edge to form pens of the size required to admit a certain shipment of sheep. The sheep are very closely packed in these pens, so that they cannot move forward, backward or turn around. This arrangement is presumably for the purpose of allowing the buyers a ready access to the animals for the inspection as to their condition and value. The sheep sheds have a capacity of about twenty thousand head. Another shed is provided for calves and pigs. The calves are tied by the neck side by side in long rows.

The traffic in stock is not altogether handled by commission men, a great deal being sold by the owners themselves directly to the butchers. Only a limited number of the stock for sale is sold by the live weight, a great proportion of the animals being sold at so much per head. Thus it is quite an interesting sight to observe in the yards a buyer examining carefully the individual animals by palpation of the groins, flanks and other parts of the animals which is usually a reliable guide as to their condition. The dealing at the stock yards is accompanied by a great deal of noise, since the bargaining between the buyer and seller is very spirited.

The abattoirs consist of a very large number of low buildings which are located near the stock yards. All the streets between the buildings are paved with cobble stones, and in some places two buildings are connected by an arched glass roof. On the side of each building are located the killing rooms in which no other light than that which penetrates through the door is available. This arrangement is the so-called "cell" system, which of course does not meet with the requirements of modern establishments. Each butcher, or sometimes several, kill their stock in

such individual cells. It is by no means satisfactory, since suitable sanitation is impossible under such conditions.

The hog abattoir is established on a seemingly more modern principle, although the mechanical appliances and the method of handling is still very crude. An interesting feature in this building is the special room provided for the bleeding and singeing of the animals. The hogs are driven into this large room, which is divided by cement partitions about four feet high into different compartments. They are then stunned with a wooden mallet, and after bleeding are laid on straw, after which they are again covered by straw, which is then ignited and thus the animals are singed. An interesting feature of the work appeared to be the fact that most of this work is carried on by women who, as a matter of fact, carry out most of the work connected with the slaughter of hogs. Thus one can see the evisceration of animals by women, likewise all the cleaning of the viscera is carried on by women.

There are no coolers connected with the abattoirs, and the carcasses have to be removed very shortly after the slaughter by the individual butchers.

The inspection is carried out by the veterinary inspectors in accordance to set rules and regulations provided for the meat inspection. It isn't in place here to enter into the efficiency of the inspection.

We were told during our visit that 40,000,000 francs have been provided by the City of Paris for the establishment of more modern abattoirs, and from our own observation it appears that there is great need for a more modern plant to meet with the present requirements of sanitation and inspection.

PASTEUR INSTITUTE.

One of the most noted institutes for research in Europe, and one which is probably the most familiar to the scientists and medical research in this country is the Pasteur Institute of Paris. The epoch-making work of the great Pasteur in bacteriology, immunity, and allied branches of medicine originated there, and

the association of Pasteur with this Institute is in itself sufficient to inspire one with the desire to visit this establishment. The Pasteur Institute is maintained from private subscriptions, donations and also from the profits from the sale of the numerous biological products which are prepared in connection with the work of the Institute.

The Institute is divided into various departments, at the head of each of which are well-known scientists who contributed many of the important discoveries made in the recent progress of medicine. Of these, I desire to mention principally Metchnikoff, Roux, the present Director of the Institute, Levadati and others. We had the pleasure of listening to a lecture by Levadati, the noted immunologist, in the course of which he showed our party probably the most interesting moving picture films ever taken. They represented the blood in active circulation in which even the red blood corpuscles could be seen circulating through the capillaries while the white corpuscles were actually seen to migrate through the walls of the vessels. Other interesting pictures were shown of the intestinal flora in living animals, phagocytosis, destruction of trypanosomes by phagocytes, etc. The beat of the heart under saline stimulation was also the subject of one film, likewise the life cycle of the mosquito. Professor Boree showed us numerous mice affected with cancer, and in his investigation he established that cancer is transmissible by contact but not by heredity. Thus he explained that after removing a newly born mouse from an infected mother it will not develop the disease, whereas if kept with the infected it almost invariably becomes cancerous.

Before leaving the Institute we of course desired to pay our homage to the tomb of the great Pasteur, which is located in a specially constructed tomb under the administration building. One can readily appreciate the feeling of everyone who is familiar with the great work of Pasteur when he enters the tomb of the great man. It was with the deepest reverence that we stood there before the catafalque of the great man Pasteur.

Some members who were particularly interested in biological

products visited also the farm of the Pasteur Institute, which is located about twelve miles from the City of Paris. They keep in all about two hundred and fifty horses for the preparations of various sera for the treatment of diseases of man and animals. The construction of the stables in which the horses are kept is most modern and sanitary. Two veterinarians are in charge of the animals, and a large force of specially trained men and girls conduct the work of preparing and handling the various biological products. The laboratories are splendid and meet the requirements in every respect. The apparatuses and appliances used in the handling of the products are up-to-date and so devised that the exposure of the products is limited to the minimum. Among the numerous products may be mentioned sera against tetanus, diphtheria, plague, gonorrhea, dysentery, etc. The bacteriologic vaccines are prepared at the Institute proper in Paris. The sale of the biological products of the Pasteur Institute are not only limited to France, but the greater proportion of their products finds a ready sale in the markets of foreign countries.

SIGHT-SEEING IN PARIS.

Tourists in Paris, no matter what their particular interest may be, cannot afford to neglect the sight-seeing of this, considered by many, the most beautiful city in the world. The accumulation of art treasures in Paris is stupendous, and it would require weeks and even months for the connoisseur to satisfy his pleasures in this line. But since our time was rather limited we confined our sight-seeing to the visiting of the most noted of the art institutions and the sight-seeing of the city proper. A day's ride in a comfortable sight-seeing coach proved very delightful. The busy life of the boulevards, the Avenue De Opera and the rue De la Paix was a very pleasing sight. The street traffic of Paris is very heavy, but appears to be well handled by the police. Horse cabs can be seen only in very limited numbers when compared with the thousands of taxicabs dashing up and down the streets with apparently the greatest recklessness. Yet the drivers have such splendid control over their cars that accidents are rather

rare. The horses in the cabs appear underfed and overworked, while the dray horses are splendid types of the Percheon, Belgian and other draft breeds.

The monumental structures, statues and magnificent historical and public buildings left a deep impression on our minds, but we had to confine ourselves to a visit of only the most noted places.

A visit of the Pantheon, in which the tombs of the great men of the nation are located, proved of great interest. It is a monumental structure, originally built for a church. The frescoes and mosaics are beautiful and represent many religious subjects, but the most striking of all is no doubt the frescoes representing the life of Joan de Arc. The tombs of Mirabeau, Voltaire, Victor Hugo and other celebrities are located in the crypts under the church. Only a short distance from the Pantheon is an old church of Saint Etienne du Mont, which was under course of construction from 1517 to 1541. This also contains many very fine paintings, and the decorations are gorgeous. In driving in our coach only two blocks from this church we are in the gardens of Luxemburg in which the noted museum of the same name is located. This contains the more modern paintings and statuary and represents one of the greatest collections of modern art in the world. Other noted places visited by our party were the Palais des Invalids which contains the great collections of arms and military paraphernalia collected during the numerous wars in which France has been engulfed. Flags, innumerable flags, captured during the battles can be seen decorating various rooms. The uniforms of Napoleon and other great generals may also be seen in the collection. Back of the museum is the church in which the tomb of Napoleon is located. The tomb is located back of the pulpit in the main part of the church. It is a circular pit in the center of which is the sarcophagus. There are sixty flags surrounding the pit, all of which were taken by Napoleon in wars. Napoleon's two brothers are also buried in very fine tombs.

The striking structure of the Eiffel Tower which is erected on the Champ Mars was a great inducement for many of the party to view Paris from its heights. The view of Paris from this

986-foot tower is marvelous. One can see from there the radiating avenues and boulevards, and it affords a very beautiful view of the entire surrounding country. At the different landings on the Tower there are restaurants, and also a theater provided for the amusement of the sight-seers.

The Cathedral of Notre Dame was also included in our sight-seeing program. It is one of the most noted historical churches in France, and in it the crowning of Emperor Napoleon took place.

Drives through the Champs Elysées and Bois Boulogne were special treats which our party enjoyed. This natural park, with its great dimensions, affords the most beautiful and varied sights of natural and artificial parking in the world. One can see the young and old of Paris enjoying the pleasures of an outing in these wonderful woods, and thousands of automobiles and horse cabs crowd the avenues leading through it in all directions. This park contains also two race tracks and polo grounds as well as athletic fields, lawn tennis courts, etc. Restaurants are found everywhere in the park and in some places one can enjoy milk freshly drawn from cows located on the premises.

An opportunity was afforded our party for viewing one of the greatest races in Europe, the Grand Prix of the City of Paris. We hired autos to take us out to the track, which is located in the Bois Boulogne, where a spectacle which we shall always remember presented itself to us. About one hundred thousand people visited the track that day. A modest estimate of the number of vehicles bringing the people to the races would be twenty thousand. All classes of France were represented in the different places reserved for the public, according to the admission fee paid. It is said that the Grand Prix creates the fashion for the following six months, and from our observations this appears to be true. We were told that the fashion makers of Paris send their models to this race in their latest creations, and copyists from all nations were there with their cameras clicking them from time to time to get pictures of these newest designs. A special small stand beautifully decorated is provided for the

President of France, who appeared on this occasion with his retinue and friends. The grand-stands on both sides of this presidential stand were filled with the notabilities of France and of all Europe. The aristocracy of the different countries are always well represented at this race, and likewise noted Americans always compose a fair proportion of those present.

VERSAILLES.

A trip to Versailles is always included in the itinerary of tourists visiting Paris. The Royal Palace with the gardens of



"The Farm" of Marie Antoinette near Versailles.

Versailles are known to be unique and represent the magnitude of the court life of France prior to the revolution. The Palace is now converted into a museum in which historical paintings and especially battle scenes of the Napoleonic wars are housed. It requires hours to go through these wonderful halls, the decorations of which alone are more than well worth one's time. The

view from the Palace through the gardens is superb. The cascades and the numerous fountains are placed with the utmost taste in landscape gardening, and one becomes impressed with the gorgeousness of the life which must have existed during the flourishing empire days. The ride to Versailles was undertaken by our party in a sight-seeing coach in order to have the opportunity of seeing the beautiful suburbs of Paris. We had also included a visit to the large and small Trianon and the farm of Marie Antoinette where she retreated from time to time to relieve herself of the tedium of court life. This farm is at the present time the beautiful spot outside of Versailles, and its buildings, the mill, dairy, etc., even now give a splendid impression of their former object.

Numerous other places of interest were visited during our sojourn in Paris, but it is not the intention of this narrative to include details of our tour.

Of art collections, the Louvre, without doubt, is the greatest museum in the world. One can spend many days in this building in viewing the wonderful creations of masters in the different branches of art. The picture gallery of course is unique, the statuary on the other hand contains also many noted originals, and the collection of curios are also the most noted of their kind. In visiting the Louvre with only a limited amount of time it is best to engage the services of a guide in order that sufficient time may be given only to the most noted of the art treasures exhibited. The building is of an immense size, and it must contain several miles of galleries lined with paintings or filled with sculptures, tapestries or relics from the Egyptian tombs. As one strolls from room to room he frequently notes groups of people before certain paintings. These usually represent the originals of subjects known throughout the world, reproductions of which may be found in school books, museums and private homes. During our visit a large crowd of people in a certain room struck our attention, and on entering the same we found that their attention was directed to a small painting, which, when we obtained a glimpse at it, we found it to be the Mona Lisa which had been

stolen and returned to the Louvre only a short time before our visit. Paintings of old masters and schools may be seen in the different rooms representing the different epochs in the art. The vivid colors of Rubens' paintings may be seen in many beautiful examples, Raphael, Rembrandt and many other great painters and their many masterpieces in this great collection. Millet's "The Gleaners" and "The Angelus" are known to everybody,



Bath of Neptune, Versailles; Also Some of Party of A. V. M. A. Tour.

and we could not help but admire the originals, reproductions of which we had learned to know from our childhood. To take up a discussion of even the most noted works of art of the Louvre would be a great task, but one could hardly fail to mention the statue of the Venus of Milo which is contained in this remarkable collection. The mutilated statue, which was excavated in Greece, is supposed to represent the most perfect figure of woman. Plaster casts of it are known to every one of us, but the original fills one with a thrill of admiration for the classical art which had

been perfected to such a degree many centuries ago. All were pleased with our visit to Paris, and felt only sorry with the approach of the time of our departure that we could not give more time to this beautiful city and its institutions. We shall always have a pleasant memory of our stay in Paris, both from a professional and a scientific point of view.

(To be continued in the next issue.)

SUPPLEMENTAL INSTRUCTIONS REGARDING INVENTORIES.

Treasury Department,
Office of Commissioner of Internal Revenue,
Washington, D. C., February 10, 1915.

To Collectors of Internal Revenue and Others Concerned:

To secure inventories of all drugs specified in the act of December 17, 1914, held by producers, importers, and wholesale dealers, as well as by those dispensing any such drugs "directly to consumers," article 13 of Regulations No. 35, of January 15, 1915, is hereby amended so as to read as follows:

Art. 13. Every person, firm or company producing, importing, selling, or dispensing any of the drugs herein referred to will, on the 1st day of March, 1915, prepare and keep on file an inventory of all such drugs (other than preparations or remedies specially exempt under the provisions of section 6 of the act) on hand at that date. No special form of inventory is here required, but the inventory made must fully and clearly set forth the quantity of each kind of such drugs, preparations, or remedies so held, and must be verified by oath not later than the 5th day of March, 1915.

DAVID A. GATES,
Acting Commissioner of Internal Revenue.

Approved: W. G. McAdoo, Secretary of the Treasury.

(American Association of Pharmaceutical Chemists.)

NOT ENOUGH VETERINARIANS to safeguard and protect the \$393,471,000 worth of domestic animals in Texas, is the opinion of Dr. Mark Francis, professor of veterinary science at the A. and M. College, according to the Dallas, Texas, *News*. There are only seventy-five licensed veterinarians in the state.

MY EXPERIENCE WITH THE SIMULTANEOUS METHOD OF IMMUNIZATION.

BY H. A. SMOTHERS, D.V.M., MT. CARMEL, ILL.

In taking up this subject of *Simultaneous Method of Immunization*, I will make no effort to take up the scientific side for two reasons. First, this discourse is to be composed of conclusions arrived at from my experience, and second, Dr. Lynch is to be heard upon the subject of Hog Cholera which embraces a wider field than my experience, therefore I dare not trespass. In the past three or four years there has been many articles written on the subject of immunization by professional men as well as laymen. There are many differences of opinion as regards the value of the two lines of treatment. Without practical experience it would be hard for one to decide which is the safe and sane method.

In this paper I may differ with some very able authorities, but will do so only wherein I am forced to do so from personal observation and experience. The subject of immunization is one of much importance. Hog cholera in the past has been the most devastating disease with which the growers of live stock throughout the corn belt have had to contend. The monetary consideration has reached enormous proportions.

As a curative agent in an outbreak of cholera, I have never been able to get the happy results from the use of serum alone that are recorded by some, and the use of the simultaneous method is still more disappointing. Therefore I have adopted as my slogan, *apply the simultaneous treatment before the herd becomes sick*. In the past year I have treated several herds and most of them have done as well as one could ask. However, there has been some things happened in two herds I could not account for.

One herd of 139 head, treated all sizes from ten days old to 300 pounds. These did well for six weeks. At the end of that time some of the smallest pigs developed a rough skin about head, some cough, discharge from eyes and nose. There was a

loss of 15 of these pigs. They all appeared to do well for about 5 or 6 weeks, at which time the smaller ones began to go bad as described. I may say the owner weaned them at about this time, and we had a spell of severe weather.

Now if anyone has had like experience, I would like to know of it and if anyone has an opinion as to what caused this trouble it will be thankfully received also. My own theory is this, that these smaller pigs were depleted to some extent by the treatment. They were farther depleted by being infested with vermin which accounted for the roughness of the skin; in some cases sores, also being taken from the mother at this time necessitating an entire change of food would naturally weaken them more, and lastly the cold weather made them victims for the ravages of pneumonia infection, which they had no vitality to resist. Now of course this owner thinks he gave these pigs the best care, but he was the kind of a man that did not want to take time for temperatures on these small pigs before injecting the virus, so form your own conclusions.

Now the next case I wish to relate is more difficult for me to account for; there were 110 head in this herd. Treated a little herd of 29 head in the forenoon, and in the afternoon went to the 110 herd; these were treated in the same manner as the ones in the forenoon with same sanitary precautions as far as the treatment was concerned. Dose given as indicated on label of bottles of both serum and virus. The virus was taken from same bottle as the 29 head were treated within the forenoon and 48 head that did well in the same herd, part which were treated before these were and the remainder afterwards. The serum was of the same series number. Now 62 head of these were lost. They began dying about three weeks after treatment, and were about three weeks in dying. Now these pigs I believe died from cholera, but why? If called upon now to treat a herd I cannot think of a single precaution that I would exercise that I did not here. I cannot think of a farmer in my community that I would rather trust to take care of a herd than the owner of the herd just described. Neither can I say the virus or serum was at fault for reasons before stated. In spite of my statement in the beginning

no doubt some are wondering if I really do believe in the simultaneous method of immunization. My answer is, I do, under proper conditions. Even the men that sustained the losses just related, I think are ahead in spite of their loss, as the country was rife with cholera adjacent to their farms, had it entered their herds unprotected the probabilities are they would have lost all and as it is they have some left, and what is of greater importance they are immune hogs.

There are a great many things in the treatment of hogs that are very unsatisfactory to the doctor. One of the things that should be impressed upon a client who contemplates the treatment of hogs by the simultaneous method is the fact that when the serum and virus are administered, only one step in the treatment has been completed, and that much of the success has yet to be earned by proper care and handling. The idea is too general that the more filth a hog is subjected to the better he thrives. This to my mind is a great deception at all times and especially after vaccination.

Now as to the time to treat hogs with best results, it is when the hogs are well. There is a great tendency to wait until some of the hogs are sick and perhaps a few have died or at least until it is on the adjoining farm to treat, this to my mind is not proceeding in the proper spirit to eradicate hog cholera. If all hog raisers would adopt this plan and follow it up it would not be long that there would be susceptible animals to propagate the infection.

Now as to age I think one may immunize pigs rather early with very good success; but a pig 50 to 100 pounds is the most agreeable size for me to treat. However, I do not advocate taking the risk for that long. Think pigs should be weaned and accustomed to the change of feed. If sows have been previously immuned it would probably be better to treat at four weeks old regardless of their being weaned. If sows are to be treated at same time I would advise waiting until pigs are weaned as I have found treating the sows and changing the diet in some cases causes the treated sows' lacteal secretions to lessen and often sows will wean pigs of their own accord, or almost starve them.

Now as to treatment of pregnant sows, it is not advisable except in cases of immediate danger as my experience has been, while if proper care is exercised in handling them you seldom have an abortion. The pigs are carried to time, as a rule, but some will come dead and those which come alive have no vitality and soon die.

As to choice of serum and virus, all the commercial firms I have obtained supplies from have been those operating under a U. S. Government license and find all to be about the same.

I treated 10 head of shoats under an introductory offer. Sufficient material was furnished to treat these with the understanding that they were to be placed on five different farms where hogs were dying of cholera.

Hogs were grade Duroc in good health, weight 50 to 80 pounds, two of these I furnished, the remaining 8 were furnished by a farmer with the understanding that any of these hogs that died and showed evidence of cholera on *post mortem* were to be paid for at market price. The vaccine company of course stood behind me in this.

The hogs were loaded into a wagon and driven to the places where they were to be left. The first two were placed in quarters where six hogs had died; the last two to die were being burned when we arrived. The weight of these two were 50 and 60 pounds, each received 20 c.c. serum and 1 c.c. virus. Next two were taken to another farm. These two weighed about 75 pounds each, received the same dose and were placed in pen with 3 sick pigs, all of which died before the time our pigs were removed, which was thirty days after treatment. Next two were delivered at another farm. Weight 70 and 80 pounds, treatment like dose placed in pen with four sick ones, all of which died and more sick ones placed in pen, I think four more, three of which died and one made recovery. Next two were delivered and treated as before. There was some variation in size of pigs, but none in dose; these were placed with four sick hogs, all of which died.

The last two were also delivered to another place and treated; placed with four sick pigs, all of which died during the thirty days. As long as these sick hogs lived the others ate and drank

from same trough, slept in same bed. These pigs were looked after by the men on whose farm they were placed. The owner of the eight or myself saw these pigs every day during the first two weeks. They showed muscular soreness and there was some elevation of temperature. The breathing was accelerated from the fourth to the tenth day, but appetite remained good all the time. They were fed on a slop composed of ship oil, meal and tankage given three times daily after fifteen days. Some corn was added to feed. We had the pleasure of gathering them all without loss in number. Of course they did not grow rapidly as the feed for the first fifteen days was not liberal.

Method of treatment as practiced by me is about as follows: I prefer the hogs put in a clean well ventilated place, the place should be roomy enough to prevent hogs being crowded, as this will cause a material change in temperature. In connection with this place, it is well to have a small place where ten or twelve hogs may be separated from the main herd to facilitate catching them easily and prevent excitement of entire herd. Where the herd is fifty head or more, I like four men to catch and restrain hogs, one man to use thermometer and disinfect. In this way one can make good time with the work.

With regard to disinfection, unless hogs have been in the mud I do not use water for cleansing the site of injection, I use a paint brush and apply chloro-naphtholeum or creso dip pure, over an area one to one and one-half inches in diameter before inserting the needle and again after the injection. The hog is then liberated to prevent further excitement. After care consists of a short ration composed of ship oil, to which oil meal and tankage are added with sufficient water to make slop of creamy consistence. When weather is warm, shade is desirable with liberal supply of clean drinking water; but mud wallows are undesirable as these are potent factors in abscess formation, especially if hogs have access to same immediately after they receive treatment.

When the weather is cold, good shelter with frequent change of bed and liberal disinfection are desirable.

VETERINARY PROFESSION AND PUBLIC HEALTH.*

BY P. R. BAIRD, WATERVILLE, ME.

Men can live together in peace and happiness only on condition that they assert for themselves, and respect in others certain rights to life, liberty, property, reputation and opinion. It is the business of the state to define, declare and enforce these rights and duties. And as citizens it is our duty to do all in our power to frame just laws and to see that they are impartially and effectually administered, also to obey these laws ourselves.

If each individual in our state was to think and live along a separate plane apart from his brother, nothing would be accomplished. Therefore it is necessary for us to work in unison, to unite our forces, to work in harmony; for united we stand, divided we fall.

As the veterinary profession advances the need of a fraternal spirit among its members is necessary in order to accomplish any problem which involves the entire state.

We are one of the leading professions of to-day, of importance not only to the live stock industry, but as a safeguard to public health.

We have, through conscientious, consistent effort, secured control of the bovine tubercular problem in our state, and in comparison with other states we have, in the own words of past Governor Haines, made good. To quote the words of a prominent live-stock breeder at our last quarterly meeting, "testing cattle for tuberculosis is only skinning off the top in so far as sanitation is concerned."

Contamination of our milk supplies through unclean methods and unsanitary surroundings and the placing of uninspected meats on the markets by our local abattoirs is of greater danger to the public health than bovine tuberculosis.

* Read before the Maine Veterinary Medical Association, at Augusta, January, 1915.

Under our present conditions, can each local veterinarian suggest changes and educate the dairyman and butcher to see the importance of such changes, and by so doing make our dairy sanitary and our meat supply free from such conditions as render it unfit for food? No!

In the first place the public wants protection, and the laws of our state say anyone seeking protection and having a legitimate cause shall be protected. Then why allow the dairyman and butcher to sell that to the public which endangers human life? The law says you shall not carry a dangerous weapon on your person. Better a loaded revolver in a man's hip pocket than the germs that cause cholera infantum, summer complaint, scarlet fever, typhoid, diphtheria, sore throat and other diseases in the milk can, or tape worm, actimonycois, ptomain and other sources of danger in our meat.

Very true, some milk producers endeavor to produce a clean product and only through ignorance do they fail, to them suggestion is all that is necessary. But what are you going to do with the man who refuses to clean up, because he cannot afford to or possibly thinks what was good enough for his ancestors is good enough for him.

There are a certain class of men in every walk of life for whom the laws are made. The state declares what man shall not do rather than what man shall do in his relation to other men. To prevent the violation of mutual rights rather than to secure the performance of mutual duties is the fundamental function of the state. In order for our profession to successfully handle the dairy and meat inspection as a state problem, we must have some standard from which to work; legislation making laws that are just not only from a scientific point of view, but practical laws that can be enforced. Our statute books are full of acts and amendments that are of as little use as were the peace treaties in the great European war.

The present system of dairy inspection in our state depends to a large extent on the local boards of health. These boards are comprised of men who are engaged in business or a profession in

their particular town, and sometimes hesitate to enforce city by-laws which are distasteful to the farmer, therefore liable to cause inefficiency.

This work is of enough importance as compared with the majority of our state offices to warrant more attention than has been previously given it.

We must get together, work together and stay together in order to accomplish anything. If we have a question of importance for the citizens of the state, they will listen, and are generally ready to pay for services rendered, but we must be aggressive, consistent and honest.

We as an association of graduated veterinarians cannot force our services on the public. The people have a perfect right to choose whomever they see fit to administer to their wants, but they also have the right to know when they make that choice whether or not they are employing efficiency or quackery. Otherwise education is a waste of time, and is ridiculous to the extreme.

If the scientific education of to-day can be acquired in a practical manner the taxpayers are throwing away quite a bit of money every year in maintaining colleges.

The modern veterinarian spends from three to four years of his time in the study of various subjects: Anatomy, physiology, bacteriology, medicine, surgery, biologics, sanitation, etc., which fit him to handle unsanitary conditions better than the medical profession. Efficiency is what the public is clamoring for in their health departments.

Politics and efficiency seldom mix and the public will awake some day and demand that the two be divorced as far as health departments are concerned, thereby deriving the direct benefit from a department erected for service wherein, problems bearing on hygiene and sanitation for the good of the public as a whole will be studied for their special advantage. It is not possible to build a department for service wherein politics dwell, for efficiency is oftentimes discarded, and inefficiency, as is often the case, substituted with incoming office-holders paying pre-election promises.

PATHOLOGY OF TRAUMATIC PERICARDITIS.*

BY W. L. BOYD, ST. PAUL, MINN.

According to Friedberger and Frohner, traumatic pericarditis is a very common disease among cattle, and by far their most frequent heart affection. During the past six months we have had the opportunity of observing three cases of this kind, one of which occurred in a yearling shorthorn calf, the other two occurring in adult Holstein cows. The anatomical arrangement of the reticulum of the heart is such that foreign bodies so often taken up by cattle (especially if sharp) often puncture the reticulum and diaphragm where they enter the pericardium.

Symptoms.—The first symptoms to be noticed are those of prolonged indigestion extending over a period of several weeks. The temperature is quite changeable, but may rise to 105-107 F. The pulse is full, and rapid (up to 110-115 degrees per minute), becoming thready, and weaker as the disease advances. The appetite is greatly impaired, it being extremely difficult to get the affected animal to partake of any food, no matter how inviting.

The respiration at first is unchanged, but becomes rapid and painful in the later stages. Trembling of the muscles in the region of the elbows may be noticed at times, and at this period a positive diagnosis is somewhat difficult; however, a few days later the diseased animal presents a marked change in appearance. The elbows are drawn outward, the back is arched and movement of any kind is avoided if possible. They rarely lie down, and if they do it is only for a short time. The heart beat becomes tumultuous and can be heard several feet away.

The accumulation of the dropsical fluids in the pericardium gradually increase until one can, by placing the ear over the region of the heart, readily determine splashing sounds. There

* Reprinted from the proceedings of the seventeenth annual meeting of the Minnesota State Veterinary Medical Association.

is a painful expression of the face, the breathing becomes difficult, being accompanied at times by a short, painful cough. The jugular veins are greatly distended, standing out like whip cords, as a result of the pressure of the exudate exerted upon the right heart. Oedema of the throat, extending down the neck and dewlap, along the chest, and anterior abdominal walls, soon follows. Diarrhœa may be present at this stage. From the onset of the symptoms until the termination of the disease several weeks and in some instances months will have elapsed. This undoubtedly depends mainly upon the nature of the foreign body. Emaciation is quite rapid.

Post-Mortem Findings.—Owing to the chronicity of traumatic pericarditis one has little opportunity of viewing the pathological changes in the first stages. More often the autopsy reveals disintegration and gangrene of the heart and heart sac as well as a portion of the lungs. The exudate in the pericardial sac varies in composition and quantity, it may be either serous, fibrinous, purulent or hemorrhagic, the color of which depends upon the nature of the exudate. If the exudate is of a serous type the color is of straw, if fibrinous it is greyish yellow, if purulent, yellowish green, if hemorrhagic it will be of a reddish brown.

In quantity the exudate may be from one to three gallons. The pericardial fluid is at times mixed with putrefactive gases which have escaped from the reticulum along the puncture. The pericardium becomes thickened and roughened. String-like adhesions from the pericardium to the heart muscle are not infrequent. The heart muscle is usually covered with a dirty grey material that is thrown up in folds and fatty changes as well as softening of the muscle fibres are noticed.

Adhesions of the pleura and lungs as well as to the diaphragm are not rare. The fluids in the chest and abdominal cavities are of an amber color and vary in quantity. A thick, fibrous cord resulting from the passage of the foreign body may be found extending from the reticulum through the diaphragm into the pericardium or into the heart muscle or even into the heart cavities. The reticulum, liver, diaphragm, lungs, heart sac and

pleura are more or less adhered by finger-like adhesions. The foreign body must be carefully searched for as it may be easily overlooked; quite often it will be found free in the reticulum, again it may be free in either the pericardium or heart cavities, while again it may be lodged in the myocardium. In summarizing, will say that the chief phenomena which characterize traumatic pericarditis are as follows:

1. Prolonged indigestion.
2. Tumultuous heart beat.
3. Distended jugular veins.
4. Oedema of the dependent parts of the anterior part of the body.
5. The avoidment of movement.

DHOBIE ITCH.—In Panama we see many different kinds of skin diseases, but the most common is that persistent, troublesome disease caused by the *microsporon minutissimum*—dhobie itch. We have had a great deal of trouble in curing dhobie itch, but the following formula relieves the itching promptly and sometimes effects a cure:

Acidi salicylici	Gm. 2.00
Hydrargyri ammoniati	Gm. 2.00
Bismuth subnitratis	Gm. 6.00
Olei eucalypti	Gm. 6.00
Lanolini, q. s. ad.	Gm. 50.00

M. Sig.: To be applied to the affected part.

The above formula and note appeared in the January, 1915, issue of the *American Journal of Clinical Medicine* and is intended, of course, for human patients; hence its appearance in a paper devoted to human medicine; but, as one of our collaborators who works on that paper said in kindly forwarding us the clipping, "it might be good for follicular mange in dogs," so we are submitting it to our readers.

REAPPOINTED ON STATE BOARD: We read in a recent issue of the Pottsville, Pa., *Journal* of the reappointment by the Governor of Dr. J. W. Sallade, of Auburn, on the State Board of Veterinary Examiners.

TUBERCULOSIS.*

BY W. H. COREY, NEWPORT, ME.

Tubercle bacilli in dairy products are mainly derived from bovine sources and enter the body in a moist state. To understand the true significance they have to the public health we must give some attention to the infectiousness of tubercle bacilli from bovine sources for man and to the way tubercle bacilli enters the body of those affected with tuberculosis.

First, deglutition: Tubercle bacilli may pass through the uninjured walls of the intestines and reach parts remote to it while the digestion of fats is going on in the intestines. Hence, fatty substances, such as cream and butter, must be regarded especially dangerous vehicles for the introduction of tubercle bacilli into the body, as it readily adheres to cream or fat globules of infected milk. No one doubts that bacilli from cattle and in meat and dairy products are more dangerous to man than those derived from persons, as the bovine bacilli is more virulent and commonest type found in children and introduced into the body by milk.

The British Commission on human and animal tuberculosis concluded from investigation that cows' milk containing bovine bacilli is clearly a cause of tuberculosis and fatal in man, and a large portion of tuberculosis contracted by ingestion is due to tubercle bacilli of bovine origin. So we must consider that any part of a tubercular animal, meat, milk, or butter, is a serious menace to public health and should not be allowed, as the per cent. of tubercular cows is from 17 to 30 per cent. An investigation shows that out of 223 samples of milk 7 per cent. contained tubercular bacilli. Another 102 samples of milk contained tubercular bacilli as high as 11 per cent. In 439 samples of milk in New York State eight and two-tenths per cent. were infected

* Read before the Maine Veterinary Medical Association, at Augusta, January, 1915.

with live, virulent tubercular bacilli. Butter from tubercular cows is virulent 120 days; buttermilk 12 days; cheese 140 days. Various recent articles showing the ease with which this disease can apparently be conveyed from cattle to man have awakened the interest of the medical profession and it is now ready to support any movement looking forward to the eradication of the disease. Considering the matter of public health, can parents afford to give their children milk from tuberculous cows? It is nothing more than feeding them poison. Children drinking milk from tuberculous cows are constantly taking the germs of consumption into their stomachs, to be distributed to other organs of the body. Day after day they are being poisoned with the tubercle bacilli from cows' milk. A common sense hygiene is exercised regarding drinking water from its place of origin to that of its consumption, and should the slightest possibility of infection arise, the water supply would be at once shut off.

Should not the same precautions be taken in regard to milk? The tuberculin test should be used to sort out all diseased cows that can possibly be so sorted. But that is not infallible and affords the farmer no protection, as the test is not compulsory. The very worst cases of tuberculosis in the herd may not react at all and be passed by the veterinarian as not diseased, and in a short time the herd becomes as badly tubercular as before. Nevertheless the tuberculin test should be applied; if not compulsory it should be made compulsory with all that sell milk in its raw state. I think every veterinarian should be more careful regarding his physical examination before making a test and by so doing save the lives of many that to-day lose their lives by our carelessness.

NEW STATE BOARD APPOINTMENTS: The following veterinarians have been appointed as members of the Texas State Board of Veterinary Medical Examiners: Dr. E. F. Jarrel, President; Dr. E. C. Smotherman, Secretary-Treasurer; Dr. J. S. Spikes, Dr. W. N. Mateer, Dr. B. F. Green, Dr. Roy W. Rutherford, Dr. R. V. Taylor.

REPORTS OF CASES.

AN UNUSUAL RESULT FOLLOWING ANTHRAX VACCINATION AND A LESSON.

By MAZYCK P. RAVENEL, M.D., Professor of Preventive Medicine and Bacteriology, University of Missouri; Honorary Member American Veterinary Medical Association; Member International Commission on Bovine Tuberculosis, etc., Columbia, Missouri.

The recent law suit brought against the H. K. Mulford Company for twenty-five thousand dollars (\$25,000) on account of the death of forty-one mules inoculated with Anthrax Vaccine No. 1 is so interesting, both from the scientific as well as the practical standpoint, and teaches so many lessons to those using biological products that it has seemed advisable to write it up for publication, so that the veterinary profession may have the benefit of the lessons taught.

HISTORY.

On July 4, 1914, Mr. E. T. Richards, a jetty contractor of Walls, Mississippi, vaccinated one hundred and five mules with Anthrax Vaccine No. 1, of the Double Vaccination Anthrax Vaccine, made by the H. K. Mulford Company, and distributed by their local agent in Memphis, Tenn. The mules were worked until noon, and were then driven into a tent stable and tied up in double rows of about twenty mules each, facing each other. The tent was open, and situated in a wire fenced corral. The operation was as follows: Two vials of the vaccine were emptied into a china cup, said to have been previously rinsed with hot water. The vaccine was then drawn into a new twenty c.c. veterinary syringe which had been neither cleaned nor sterilized. The needles also had not been sterilized. Before the injection was made, the site was washed by an assistant with a carbolic acid solution said to have been strong enough to cause the skin to peel. The injections were made on the left side of the neck about midway between the lower jaw and the shoulder. Twenty-one mules were injected by Mr. Richards in order with this one syringe full, the operation requiring approximately thirty minutes. He then returned to the cup which had been standing open in the meantime, emptied the few remaining drops, and rinsed it with a weak solution of carbolic acid, the exact strength not being known, but

made by adding "a few drops to four or five tablespoons full of water." Four vials (40 c.c.) of the vaccine were then emptied into the cup, the syringe refilled and twenty-one more mules injected. The syringe was again refilled with the remainder of the four vials, which had been standing in the cup in the meantime, and twenty-one more mules injected. The needle was changed on refilling the syringe. The cup was again emptied, rinsed with the weak carbolic acid solution, four more vials (40 c.c.) of vaccine emptied into it, and forty-two mules again injected by the same procedure, making one hundred and five out of a total number of one hundred and ten vaccinated at that time.

As far as the evidence goes, during the injection of the mules, the cup stood on a shelf in the feed room uncovered and open to the dust of the stable. After the operation was completed, all of the mules were turned out of the lot and allowed to go to water to a pond, or "blue hole," as it is called in that neighborhood, a short distance from the levee and the camp, and remained out until late that evening when they were returned to the corral. On July 5th, Sunday, the mules were not worked, but two were found bogged down and dead in the mud across the levee near the pond; the remaining one hundred and eight were apparently normal. On July 7th, three days after the vaccination, one mule showed signs of illness. On July 8th, four mules were dead and thirty-seven were ill. All showing symptoms were turned out and fenced off in one corral and stable. By seven a. m., July 11th, forty-one mules had died; one other was ill, but was probably suffering from distemper. These forty-one mules were said to have occupied places in the stable one right after the other, and all of them to have been the lot which were injected with the second batch of vaccine composed of four vials. There was no death in either the first twenty-one or the last forty-two which were injected, and no illness.

During the week when the mules were dying, Dr. R. E. Collins, of Memphis, was called out to the camp, and with the brother of Mr. Richards administered to all, both those which were sick and those which showed no symptoms of disease, fifteen hundred (1,500) units each of tetanus antitoxin. None of the mules which were ill responded to this treatment in any way, and the mules showing no symptoms continued in normal condition. The diagnosis made by Dr. Collins was tetanus.

The symptoms as described by him were as follows: In no animal was there swelling at the site of injection greater than that usually found after vaccination. No temperatures were taken by

Dr. Collins. The first symptoms observed was a curving of the neck to the side on which the injections were made. The animals walked a great deal of the time, mostly in a circle, their gait gradually becoming more and more difficult. The animals ate, or tried to eat, during the entire course of the disease, though it became more difficult as the symptoms increased in violence. At death, jaws of all were apparently locked, but in some they could be opened two to three inches, three to five hours before death. The animals became stiff over the whole body, fell, and died within three to four hours as a rule, though some lived as much as twelve hours after going down.

On July 12, Drs. John Reichel and M. J. Harkins, of the H. K. Mulford Company arrived at the camp and proceeded to make an investigation. Decomposition was far advanced in all mules. Specimens of the heart blood, spleen, and ear were collected from two mules which died on the 9th, one which died on the 10th, and one which died on the 11th. The heart blood was collected in sterile pipettes and sealed immediately. The spleen was placed in sterile glass jars. The ear was wrapped in paper and packed in ice. At eight p. m. of the same day cultures were made and smears examined under the microscope. No anthrax was found in either cultures or smears.

The vials which contained the anthrax vaccine, on being emptied, were thrown on the ground of the corral, in spite of the directions printed plainly on each that the cork and vial should be burned. Four days later, when the mules were dying, these vials were picked up and submitted to Dr. Krauss, of Memphis, who found tetanus germs in one.

The plaintiff claimed that one of the second lot of four vials had in some way become infected with tetanus germs during the manufacture at the laboratory, and that so much toxin had been formed in the meantime that the death of the animals was unusually rapid.

The defendant, by means of photographs and testimony, was able to show that every known scientific precaution was taken in the making of the vaccine, beginning with the manufacture of the bouillon used for the culture and the sterilization of the containers, down through the bottling and shipment; that the inoculation of the culture flasks was done in a special room used solely for that purpose; that each lot was tested culturally and by inoculation into animals; that after bottling, each individual vial was carefully inspected and sealed with paraffin; that no tetanus cul-

tures were kept or used in the laboratory where anthrax vaccine was employed, all such cultures being in the other laboratory nearly a mile away; and that every step in the entire procedure was in accordance with the most advanced scientific technic accepted by bacteriologists.

After the testimony on both sides was in, and the counsel had made their speeches, the judge reviewed the case, held that there was no negligence on the part of the manufacturer, and gave peremptory instructions to the jury for the defendant, the case being decided in favor of Mulford and Company without the jury leaving their seats.

COMMENTS.

The defendant made no claim that the disease was not lock-jaw, although owing to the short period of incubation as well as the exceedingly short duration of the disease in all instances, this diagnosis might well be questioned. It is well known, and the fact was admitted by the experts of the plaintiff, that the soil in that part of the country, especially where the mules are kept in tent stables along the levee, is rich both in tetanus germs and in the germs of malignant edema. The weather was exceedingly dry, and the dust and flies were very bad. The cup into which the vaccine was poured, as pointed out above, was left without protection in the feed room of the stable. The driving of one hundred and ten mules into this stable, and tying them up, unquestionably created clouds of dust which pervaded every part of the stable and feed room, so that even admitting that the rinsing of the cup was efficient—although the carbolic acid solution was prepared in a haphazard way and its real strength unknown—there was abundant opportunity for the germs of both tetanus and malignant edema to gain entrance to the vaccine, especially to those lots of forty cubic centimeters, one half of which was allowed to remain in the cup during the injection of the first half, which as testified to, required about one-half an hour. Unquestionably there was every opportunity for the infection of the material injected, and it was admitted that no attempt was made even to clean the syringe used, much less to sterilize it. The injections were made by a man who had no knowledge of veterinary medicine, and no veterinarian saw the animals until a number of deaths had taken place. There was an entire absence of what a professional man would regard as being the most ordinary precautions in the use of the material.

The use of biological products in human as well as veterinary medicine has come to be enormous. We are obliged to have them, and they constitute a tremendous scientific advance both in the treatment and the prevention of disease. They require the utmost care in their preparation, and our manufacturers have met this demand by building laboratories and stables which are models. In no other way could they have attained the success which has attended the use of these products. All such laboratories are now under government license and government supervision, the products being tested by the Hygienic Laboratory in Washington, for the human side, and the Bureau of Animal Industry, for the animal side.

It must be clearly borne in mind that no precautions taken during the manufacture can protect against gross carelessness in administration. These products are put out for the use of veterinarians and are so advertised, and are not intended for use by persons who have had no training in the science of medicine.

The lesson is a clear one. First, that these products should be administered only by those who have had some training in their use. The second point is equally clear, and is so self evident that it hardly seems necessary to call it to the attention of trained men, except for the frailties of human nature; *i. e.*, that in the use of biological products we are dealing with substances infinitely more potent both for good and for evil than ordinary drugs, and therefore their use requires special precautions.

It is of the utmost importance to the public generally as well as to the profession, that the manufacture of these products shall be in the hands of conscientious firms, able and willing to employ the best bacteriologists and scientific men in their production, and when we are assured of this fact, these firms should be protected against law suits such as this one.

It is the duty of every professional man to select his biological products with care, and having assured himself of the reliability of the firm from which they come, he should see that every care is exercised by himself in following out the instructions given, and in taking necessary aseptic precautions in their administration. Should any unfortunate results occur after the use of biological preparations, the veterinarian should first make a careful investigation and exclude all other possible causes before reaching the conclusion that the product is at fault, thereby protecting not only his own reputation, but also that of the manufacturer, and avoiding law suits against the manufacturer.

INTESTINAL INTUSSUSCEPTION IN CATTLE.

By JOHN K. BOSSHART, D.V.M., Camden, N. Y.

"Careful observation makes a skillful practitioner, but his skill dies with him. By recording his observations, he adds to the knowledge of his profession, and assists by his facts in building up the solid edifice of pathological science."

Case No. I.—*Invagination of Ileum Due to Intestinal Tumor.* Patient was a nine-year-old grade Holstein cow. She was taken sick during milking-time in the morning, striking at her abdomen with her hindfeet, lying down and getting up every few moments. She stopped eating and continued to be restless for a number of hours. Toward evening she had quieted down but did not eat nor drink. Bowels had moved once since onset of the trouble.

The next morning the cow was resting easy, but had no appetite and gave no milk.

Writer was then called and the following observations were made:

Pulse, respiration and temperature were normal. Muzzle moist, eyes somewhat dull. Peristalsis on right side present; rumination suppressed. Bowels had not moved during the night.

Rectal examination was negative except for the presence of a gluey whitish exudate. No fecal matter.

Provisional diagnosis of invagination was made and operation advised.

This was however not carried out until four days later, or on the fifth day of sickness.

The clinical picture was unchanged except that the eyes were more dull and the temperature 100 degrees F. or about one degree less. Owing to the great depression only two drachms of fl. ex. belladonna were given by mouth.

The operation was carried out as described in an article in the AMERICAN VETERINARY REVIEW of February, 1914. After opening the abdominal cavity in the right flank the left hand was introduced and a coil of intestine delivered through the wound. It was rather firm and dark red in color. An invagination was readily seen and an attempt was made to reduce it, which was successful.

Necrosis of a large part of the intestine and a perforation were present. See Plate No. I. A hard mass, exposed through an incision made over it, proved to be a fibrous tumor partially obstructing the intestinal lumen. Resection of the necrosed and perforated part was decided upon and the operation carried out as mentioned before.

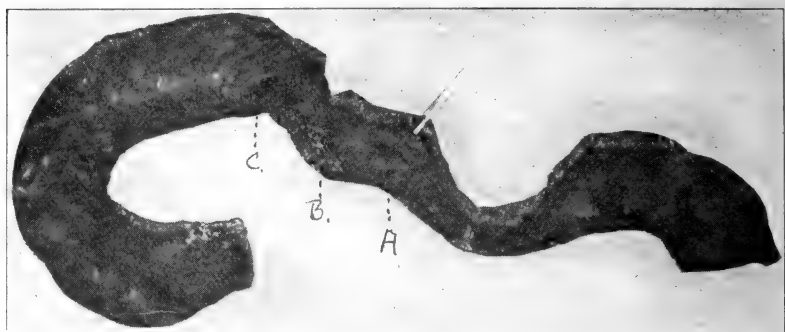


PLATE No. I.

Portion of Ileum: A—Obstructing tumor. B—Perforation. C—Point of invagination.

Feces passed by rectum four hours after operation, and cow made an uneventful recovery.

Case No. II.—*Invagination of Floating Colon Due to Intestinal Tumor.* This patient was a grade Holstein cow belonging to E. S. of Osceola, N. Y.

On April 11, 1914, she was taken sick like the previous case. On the second day after onset the cow was examined and the clinical picture presented was identical, except that it was supplemented by the rectal findings. These were a firm coil of intestine and within it a harder mass of the size of a small hen's egg. After differentiating the parts from the non-pregnant uterus and the ovaries, the diagnosis of intussusception was made and operation advised, after an unsuccessful attempt to reduce the invagination by rectum.

This cow was rather lively yet and an ounce capsule of chloral hydrate was measured out, dissolved in one quart of water and given as a drench. The operation was carried out in the usual manner.

This proved to be a case of invagination of the floating colon. Great difficulty was experienced in delivering the coil through the incision, because of its location in the pelvis (which made possible the rectal palpation) and its short mesentery. Reduction was easily accomplished, as no adhesions had been formed yet. Necrosis was present over a small area that covered the firmer mass palpated before. This was excised, also all the necrosed area. End-to-end anastomosis as before. The firm mass proved to be a rather brittle fibrous tumor.

Recovery was complete, with primary union of incision. This cow remained the best milker during all summer of 1914.

Case No. III.—*Obstruction of Anterior Mesenteric Artery.* On November 13, 1914, a three-year-old grade Holstein cow, belonging to P. M. of Osceola, N. Y., was taken sick in the same manner as the two previous cases. History and clinical picture were the same. The heifer was seen on the third day after onset. She was bloated however and the pulse was rather fast. The characteristic exudate in the rectum was present, but nothing else abnormal was palpable. This animal was down and unable to rise.

Prognosis was given as hopeless, but exploratory laparotomy suggested and permitted.

On opening the abdominal cavity (under influence of chloral hydrate) it was difficult to retain the coils of small intestine within, so great was the intra-abdominal pressure. All those loops that were visible were uniformly cyanosed, empty of liquids or feces but somewhat distended with gas. Nothing abnormal could be felt in the abdominal cavity except a thickened and hard mass at the anterior mesenteric artery. A small part was broken loose with the fingers and brought to light. It was fibrous brittle material. An attempt to remove more of it resulted in hemorrhage and the death of the animal.

This was clearly a case of obstruction of the anterior mesenteric artery and while it should not be grouped under invagination, it certainly presented a similar clinical picture and adds one condition to be considered in the differential diagnosis.

Case No. IV.—*Inversion of Caecum into Colon and Secondary Intussusception.* A four-year-old grade Holstein cow, owned by A. H. of Camden, N. Y., had an attack of colic on December 13, 1914. This was manifested by great uneasiness, striking at her abdomen with her hind feet, lying down and getting up. Lying in sternal position with the hind legs in the gutter seemed to be the most comfortable position during the attack. The patient lost her appetite and gave no milk the same and the next day. Bowels moved normally. Appetite returned gradually and cow seemed to be well until December 25 when the same symptoms returned but more aggravated this time. A call was made and the following symptoms were found:

Pulse 100, respiration 28, temperature 101. Cow was lying on her sternum quietly, hind legs in the gutter. Soon she laid on her side and kicked viciously into the air. Then she got up, went down again on the other side and kicked again.

A rectal examination was made and a firm coil was noticed which led to the diagnosis of invagination. Immediate operation

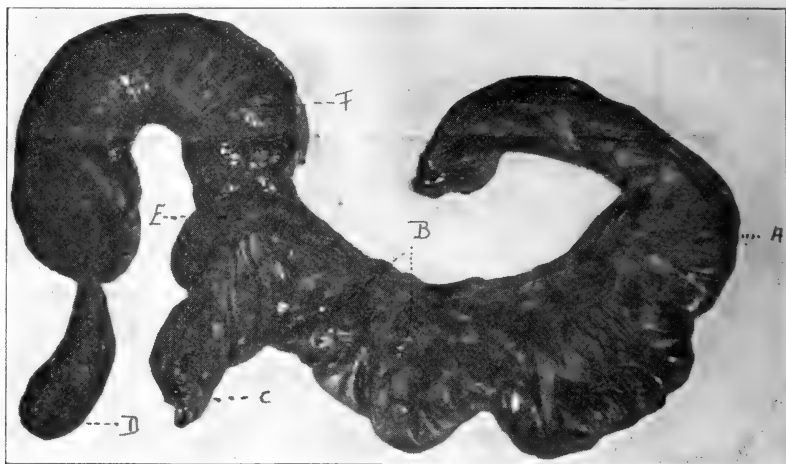


PLATE No. II.

A—Colon. B—Perforations. C—Ileum invaginated. D—Inverted caecum passed through perforation E of Colon. F—Everted Colon.

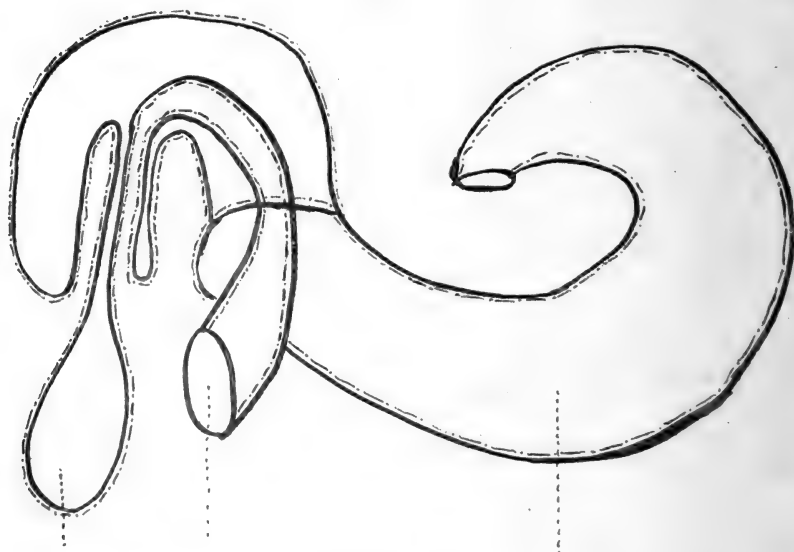


PLATE No. III.

Explanation: Broken line—mucus membrane. Entire line—serous membrane.
 Ileum Floating Colon
 Caecum inverted into Colon

was advised but put off because of the owner's wishes. Chloral hydrate was given as analgesic treatment.

On December 27 (2 days later) patient was seen again. Pain had gradually subsided. No appetite for food or drink, no milk, hide felt cold, muzzle was dry, eyes looked dull. Pulse 84, temperature 102.4, respirations disturbed because of continuous tremors of the entire body.

Rectal examination showed the presence of a great amount of bloody exudate. Same coil was palpable as before but it was firmer to the touch. It is worthy of note that the exudate in this case was not very sticky, but contained much blood undergone decomposition.

Operation was now permitted and performed in the former way. The coil was readily found and delivered after the incision had been enlarged. Plate No. II illustrates the coil removed from its attachments. It was not possible to reduce the invagination and the part had to be removed *in toto*. The mesentery involved was edematous and there was some hemorrhage that proved difficult to stop, but was finally accomplished by tying the mesentery off in sections using catgut and needle. End-to-end anastomosis was accomplished and the serous layer of the mesentery sutured to the intestines, on both sides; that is, longitudinally. Operation was completed in the usual manner. A second dose of chloral hydrate consisting of one ounce dissolved in one quart of water had to be given during this operation.

Wound healed by primary union. Every second day for eight days one pound of lard with one ounce of aromatic spirits of ammonia and 30 minims of fl. ex. of capsicum was given. Hay was allowed in small quantities as well as silage and turnips.

Recovery was complete. On January 17 the flow of milk was increasing and on January 29 she was giving a painful night and morning.

A diagram has been added to explain Plate No. II.

It is evident that inversion of the caecum was the cause for the first attack and the invagination secondary to it.

CANKER.

By WILFRED J. STOKES, Veterinarian, Sixth Field Artillery, Fort Riley, Kans.

This subject is one which is full of interest but not at all satisfactory for some to treat. I have theorized considerably on this condition and simply state my ideas and outline a simple

systematic line of treatment which has been very satisfactory to me. It is not at all original or new but the manner of handling the case may be different to that adopted by many.

Cause. This is a point on which opinions differ. Infection, with various forms of Spirochetes, being held responsible by some. These organisms have repeatedly been observed by me in the material obtained from these cases. I look upon them as being secondary invaders and not causative.

The disease follows "Thrush" and injuries to the pododerm which cause or necessitate removal of the horny covering, thus exposing the sensitive layers, which not being properly treated or protected, suffer from the injurious effects of filth and moisture. We frequently notice a bulging of the sensitive layers following the removal of the horny covering in nail punctures. Moisture, causing a maceration and rotting of the horny layer causes a swelling and bulging of the sensitive layer. The continued effect of the moisture greatly enlarges the numerous papillae of the sensitive structure and to such an extent that the general appearance is that of a sponge. The exposure and subsequent constant irritation cause a serous discharge which bathes the exposed area; which, with the moisture constantly present on the ground, effectually intereferes with the production of firm epithelial cells, of which the horn fibres are composed.

The longer the condition has existed, the greater the change in the normal function of the part and the more resistant to treatment.

Treatment. Nearly everything has been tried in the treatment of this disease. Agents covering a range of action from mild dusting powders to powerful caustics; biologicals (bacterins), drugs administered internally (arsenicals), etc. I have treated a number of cases, all of them successfully, and if gotten early, quickly cured them. I give a case report with what is probably a typical average line of treatment.

Subject—Roan mule, about 1350 lbs., 8 years, canker left hind foot.

Admitted to hospital April 26, 1912, salicylic acid pack.

April 28, tincture iodine.

April 30, iron, zinc and copper sulphates, equal parts.

May 13, hot iron, 3 sulphates.

May 18, hot iron; tr. iodine and iron, equal parts.

May 19, 3 sulphates, bacterin 2 c.c.

May 20, formalin, 12 per cent. solution.

May 23, formalin, 12 per cent. solution; bacterin, 5 c.c.

May 27, 3 sulphates; bacterin, $2\frac{1}{2}$ c.c.

May 29, zinc chloride, full strength; bacterin, $2\frac{1}{2}$ c.c.

June 4, tr. iron and iodine, equal parts; Fowler's solution, $\frac{1}{2}$ ounce, twice daily.

June 8, tr. iron and iodine; bacterin, $2\frac{1}{2}$ c.c.

June 12, tr. iron and iodine.

June 19, tr. iron and iodine; Fowler's solution discontinued.

July 20, foot trimmed; hot iron; 3 sulphates.

July 30, 3 sulphates.

August 4, powdered permanganate pack.

August 12, 3 sulphate pack.

August 14, powdered permanganate pack.

August 22, tr. iodine, salicylic acid pack.

The above varying line of treatment continued until I took charge of the case June 16, 1913. At this time the entire frog, three-fourths of the sole, all of the bars, and the wall of inner heel and quarter for about one-half of its height were affected. The foot was first thoroughly trimmed and the wall lowered; the spongy material was removed with a sharp knife, a 10 per cent. solution of formalin was then applied, followed by the application of hot pine tar; a large mass of oakum was then applied over the diseased area to give lots of pressure, and a bar shoe and leather pad was applied. The bar was made large to cover nearly all of the frog, and large, long clips were turned at the toe and both quarters. The clips held the shoe firmly in place and prevented expansion of the weak wall, which would lessen the pressure caused by the mass of oakum. The animal was then sent home to be put to work and to be returned for treatment when called for, which was at intervals varying from one week to one month, depending upon the appearance of the foot. Fowler's solution was given at intervals, starting with $\frac{1}{2}$ ounce doses twice daily, gradually increasing to $1\frac{1}{2}$ ounce doses twice daily and followed by a gradual decrease to $\frac{1}{2}$ ounce doses and then an intermission of a month. This was repeated two or three times. The local treatment was continued over a period covering several months, the animal being kept at work, and recovery was gradual and permanent. The foot remaining slightly smaller than normal. After being discharged from active treatment, I superintended the shoeing of the affected foot at intervals of 4-5 weeks, a bar shoe being applied. In June, 1914, a well developed case was discovered in the left hind foot involving all of the frog, the bars and a small portion of the sole. This was treated with the formalin and tar, a bar shoe and leather being applied

to give lots of pressure. This case is at present practically cured without deformity.

Recovery was slow being retarded by some changes in the strength of the formalin solution. At first an aqueous solution was used and of 5 per cent. strength; this was progressively increased to a strength of 50 per cent. Later a 50 per cent. solution of formalin in 95 per cent. alcohol was used. These various strengths were made to note their effect. Solutions stronger than 50 per cent., both aqueous and alcoholic, formed scabs and greatly retarded healing.

The outline of my present treatment is as follows:

- 1st. A thorough trimming of the foot.
- 2d. Removal of spongy material with a sharp knife.
- 3d. A thorough swabbing with a 25 per cent. solution of formalin in 50 per cent. alcohol.
- 4th. Covering with a thick layer of pine tar and a *large* mass of oakum.
- 5th. Application of a bar shoe and leather.
- 6th. Work.

After a few treatments the parts assume a more healthy appearance with lessened discharge and which is now cheesy in consistency instead of fluid. The spread of the disease checks and new horn formation is noticed at the margins. The formalin in this strength is drying but does *not* form a scab. The tar forms an oily covering and protects from ground moisture.

Summary. It will be seen that the caustic line of treatment which extended over a long period, was valueless, the case getting worse and the animal was kept idle. Caustics, while drying the surface and forming a hard scab are valueless for the irritation which they produce cause a severe tissue reaction with a marked serous discharge which accumulates under the scab and continues the macerating action and causes a progressive separation of the horn from normal areas, thus causing a spread of the condition. Various dry dressings used produce a similar effect.

Bacterins may be of value in overcoming the secondary infection but are not essential.

The formalin effectively disinfects and the tar keeps the parts clean.

Arsenic may be of value to the derma. It is interesting to note that prolonged treatment with arsenic (Fowler's solution) for canker in the right foot did not influence the developing case in the left.

Pressure is very important as it effectually retards or prevents hypertrophy of the sensitive layer, taking the place of the horny layer.

In order to successfully treat these cases it must be borne in mind that the normal protective covering is missing and the enlargement is due to moisture and irritation. Logical treatment is therefore directed to artificially replacing the missing horny layer and excluding moisture, and is essentially *protective* and not *destructive*.

The essentials of the treatment are the *tar and pressure*, the formalin being simply an aid.

A PECULIAR BOWEL CASE.*

By M. W. SULLIVAN, D.V.M., Marcellus, N. Y.

On September 29 I was called to attend to a draft mare, weight 1,400, age 8 years. Mare had been driven lightly this day, but previously to this had not been used for a couple of weeks. Mare drove as well as usual but refused to eat grain so owner notified me. On examination I found mare persisted in lying down most of the time but remained quiet, pulse very weak and fast, temperature about 103.4 and mucous membrane inflamed. I was not positive as to my diagnosis, so told owner she had an attack of indigestion; although I could not account for the fever. I administered heart stimulants, antispasmodics and antiferments along with a quart of raw linseed oil, and about two hours later the heart beat became stronger, so I departed. I called on animal for several days and fever slowly abated after which she began eating.

Animal now appeared to be gaining in flesh and to convalesce until October 20, when I received a hurry call to attend to same animal. This time she was in intense pain, sweating profusely and showed all the symptoms of acute indigestion. I followed the usual line of treatment, but the hypodermics of arecoline did not cause any purging, but *did* put the mare in intense pain; so I told the owner that I was practically certain mare had a twist of the small intestines, with a fatal prognosis. Animal gradually grew weaker and died the next day. On account of the peculiarities involved in the case I decided to hold a *post mor-*

* Read before the Central New York Veterinary Medical Association, at Syracuse, November, 1914.

tem; which disclosed the following: I found a very marked twist in the small intestines which involved about three feet of the bowel. On running my hand along the twisted section of the bowel I found an adhesion had formed between the bowel and the peritoneal layer of the abdomen. I incised the adhesion and pus escaped; the inside was gangrenous and contained a piece of timothy hay two and one-half inches long.

I conclude that the first attack the mare had was when the piece of hay penetrated the bowel, thus causing peritonitis. The apparent relief was due to the piece of hay becoming encapsulated and finally forming this adhesion which caused the animal's death.

VEGETATIVE ENDOCARDITIS AND CIRRHOSIS OF THE LIVER IN AN AGED BOSTON TERRIER.

By CRITTENDEN ROSS, D.V.M., New York, N. Y.

In response to a call to see an aged Boston terrier, I found the patient in pretty bad shape; having had no bowel movement for three days, and had been vomiting for the 24 hours preceding the time of my visit. A cathartic was administered and an enema of glycerine given. The latter caused an evacuation of the contents of the lower bowels, but the cathartic was not retained; so after the stomach had had a rest of three-quarters of an hour, a second cathartic was given, from which an action resulted. The dog could retain no food upon its stomach, however, being kept alive on liquid peptonoid, which it retained, but still the dog continued to grow weaker and weaker, until it was no longer able to stand or move, when the owner decided to have him put to sleep; which was done.

Autopsy: The stomach was in a catarrhal condition, as well as the intestines; the distal half of the caecum was distended with dark tarry feces, while the remainder of that organ was empty. The heart contained vegetative growths in the right auricular appendix and on the tricuspid and bicuspid valves. The liver showed marked cirrhosis.

HOG CHOLERA QUESTIONS, by F. B. Hadley, is the title of *Circular 54* of the Agricultural Experiment Station of the University of Wisconsin. It is filled with valuable information on hog cholera, and well worth possessing.

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

TUBERCULOUS OSTITIS OF THE VERTEBRAE IN A HORSE [*Capt. T. Lishmann, A.V.C.*].—Five-year-old chestnut mare was bought in the month of October and showed nothing abnormal the first few weeks, until one day she was noticed showing some amount of difficulty in picking up from the floor of her stall some hay. This manifestation increased until the following June, when she fell in her stall, bruised both of her haunches and was laid up for good.

Her condition was fair, though the mare had an unthrifty appearance. She moved her head with freedom, from side to side, could also slightly raise it, but when it came to lowering it, the poll could be lowered no further than on the level with the withers. Having seen similar cases before the author thought the diagnosis simple. Tuberculine was resorted to and the result positive. The temperature having raised to 105.2 degrees. *Post mortem*: No trace of tuberculosis in any of the internal organs, notwithstanding the most careful examination. But in cutting the muscles away from the anterior half of the vertebral column, the structures round the 7th cervical, the 1st, 2d and 3d dorsal vertebrae were noticeably peculiar and reddish. Dissecting of this region exhibited many soft centers of caseous and tuberculous nature. The diseased vertebrae were boiled and then it was found that the first and second dorsal were firmly ankylosed by growth of bone, which had spread to the head of the first and second ribs. The third dorsal vertebrae was also affected. The sixth and seventh were very rough.—(*Journ. of Comp. Pathol. and Therap.*)

REMARKABLE CASE OF NECROSIS OF THE SCAPULA IN A COW [*T.G. Reynolds, M.R.C.V.S.*].—Illustrated record of a cow, which had calved and retained the placenta. On the fourth day after parturition, the right shoulder began to swell, with local symptoms resembling those of black leg. Following this, the muscles and skin covering the shoulder sloughed to such an extent as to

leave the scapula exposed. This was removed by the author. Before the removal the exposed portion of the bone measured about six inches by four and the whole scapula could be moved up and down under the skin. It was only necessary to slit the skin to remove the bone. Subsequently the cavity filled up with granulations and cicatrix went on. Seen about three months after, the cow was found in good condition, very lame, but improving in her walk; every day putting more and more weight on the limb. Large piece of new formed bone could be felt over the scapular region under the skin.—(*Ibidem.*)

TEMPORAL ODONTOMA [*B. H. Mellon, M.R.C.V.S.*].—A yearling colt had, since birth, chronic suppuration of the temporal region. There was a marked swelling below and in front of the external ear, with a small opening, discharging profusely pus with the characters associated with diseased bone. And on palpation a hard body could be made out pointing forward and firmly adherent to the cranial bone. Temporal odontoma was diagnosed, the horse cast, chloroformed and the hard substance exposed and removed with hammer, chisels and bone forceps. It had the appearance and structure of an ordinary molar. It sprang from a perfect alveolus and was surrounded at its base by a gum-like substance. There was also exposed a second tooth through an accidental slit of the instrument. Recovery was uneventful.—(*Veter. News.*)

TUBERCULAR MENINGITIS IN BULLOCK [*W. J. Young, F.R.C.V.S.*].—An Irish bullock presented the following conditions: Bleeding from the left nostril, staggering gait, both horns loose. He was slaughtered. Submaxillary, retropharyngeal and mediastine lymphatic glands showed old standing tuberculosis. There were small tuberculous deposits on the meninges of the medulla oblongata and Pons Varolii. There was nothing wrong in the brain—(*Veter. Record.*)

HERMAPHRODISM IN THE OSTRICH [*Stanley Elley, M.R.C.V.S.*].—Castrating a number of birds, in one of them the writer, after the incision and attempting to locate the right testicle, could not find the organ. He then broke through the fold of peritoneum, which normally separates the two testicles and endeavored to locate the left one, but in place of a testicle he found what felt like a small ovary. Tracing this along, two flabby, slightly elongated structures, somewhat the size and shape

of an ordinary bean, were noticed. One was attached to either side and the left about an inch anterior to the right. The whole mass was removed and on further examination proved to be an imperfectly developed ovary, to either of which was attached a rudimentary testicle. The total weight of the ovary and testicles was barely two ounces. After the operation, the bird was examined per cloacum and there was found having a penis, well developed and resembling that organ in a young bird of six months of age. The writer thinks the case a true case of hermaphroditism, the first on record in the ostrich.—(*Veter. Record.*)

FRENCH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

MONORCHIDY IN MONKEYS [*Messrs. Query and Brock Rousseau*].—Common in our domestic animals, this anomaly is extremely rare in monkeys. The authors report two cases.

In one a large sized baboon there was but the left testicle apparent. It was normal, as big as a pigeon's egg and weighed about 20 grams. The other organ was found after dissection in the peritoneal cavity, no bigger than a small bean and on section appeared as a homogenous glandular mass without noticeable differentiations. In this case, there had been arrest in the descending motion of the right testicle and complete atrophy in the testicular gland. It was a case of classical abdominal cryptorchidy.

In the other animal of the same species there was a left normal testicle. The right one, about half the size of the left organ, was hanging at the end of the cord, outside the peritoneal cavity, at about 10 centimeters from the normal place of the envelops. It was felt under the abdominal skin at the external opening of the inguinal canal. The cord was only half the length of that of the left side.

Under the skin, at the place where the right testicular envelope ought to have been, there was a stone, roughly rounded, and as big as a boy's marble. There was another in the superior crural region close to it. These stones were encysted and surrounded by organized membrane. These were entirely independent of the small anomaly.—(*Rev. Path. Compar.*)

SUBCUTANEOUS FILARIOSIS OF DOG [*Messrs. Bernard and Bauche*].—This subcutaneous affection of dogs, attributed by

Raillet and Henry to *Dirofilaria repens* is transmitted by mosquitoes, principally the *Stegomyia fasciata*. In this intermediate host, the microfilaria develops in the canals of Malpighi; the evolution is complete in 9 days with a temperature of 30 to 35 degrees C. The authors have attempted to reproduce the filariosis of dogs in having young healthy subjects bitten by mosquitoes severely infected, they all died from the stings. The development of the young filarios which have penetrated under the skin of dogs is very slow, as they are not found except in animals at least one year old.—(*Soc. Pathol. Exotiq.*)

SUPRARENAL GLANDS AND TOXI-INFECTIONS [*A. Marie*].—The severe lesions of congestion often observed in various microbial diseases, such as tuberculosis, tetanus, as well as the histologic alterations described in suprarenal glands, have for a long time suggested the question, if these organs did not play a part in the defence of the organism towards infectious agents and their secretions. The author has studied, on this subject, the properties of adrenaline, product of secretion of those glands.

One-hundredth of a milligram of adrenaline can neutralize above 50 doses of tetanic toxine that kills a mouse. The action of adrenaline on the toxine is an action of direct contact; the separated inoculation of the toxine and of the suprarenal product never prevents the intoxication, because the toxine is fixed on the nervous cells. Bacterian toxins, introduced in the organism, stimulates—through the intermediate nervous system—the secretion of adrenaline, hypertensive agent which raises the pression of the blood and neutralizes part of the microbial toxins.—(*Annales Institut. Pasteur.*)

TUBERCULOSIS IN WILD DOG [*Mr. Bergson*].—Two wild dogs of the Zoological Garden of Saigon were at the same time taken with offensive diarrhoea, incoercible, accompanied with the evacuation of numerous parasites, of several kinds; notwithstanding an anthelmintic treatment, both dogs died shortly after in an extreme condition of emaciation. *Post mortem* showed lesions of generalized tuberculosis, confirmed by microscopic examination of frottis, of lymph glands and ascitic fluid, as well as by inoculations to guinea pigs. Bovine tuberculosis not existing in Indo-China and on the contrary man being frequently tuberculous, it is justifiable to suspect contamination in these two cases to have taken place from sputa of their keepers or of visitors.—(*Soc. Vet. de Lyon.*)

ROUMANIAN REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

FOLLICULAR MANGE IN DOG [*Prof. Gr. I. Slavu*].—Reviewing all the treatment advocated against the rebellious and troublesome disease, the author describes a new treatment which has proved in his hands most satisfactory, having given him lasting radical recoveries. Out of 24 dogs in which the diagnosis had been applied, 16 had the squamous form, localized in some and generalized in the others; 6 had the generalized pustulo-squamous and 2 the papulous. Most of these dogs were in very poor condition. The treatment consists in the application of a phenol camphorated ointment, made of phenol liquid 1 part, pure ordinary camphor 2, white vaseline 6. The treatment requires from 9 to 16 days, according to the severity of the disease.

The technic of the treatment is this—the animal has his coat clipped all over. The body is divided in four parts, every day one part is successively rubbed with the ointment. After four days a bath of sulphur of potash 2 per cent. is given. The rubbing of the ointment is started on again and the same manipulations carried on three times for mild and four for severe cases. With the pustulous form of the disease, it is essential to squeeze out all the pus from the diseased spots before applying the ointment. Sometimes the baths may not be essential, and recovery is obtained just the same.—(*Arhiva Veterinar.*)

GENERAL ANESTHESIA WITH INTRAPERITONEAL INJECTIONS OF CHLORAL HYDRATE [*Georges V. Nichita, Milit. V.S.*].—This method of anesthesia preconised by Richet for small animals and applied for the first time by Prof. Locustaneo for the horse, has been the subject of several experiments made by the writer, which he describes and resumes as follows:

1. Intraperitoneal injections of chloral hydrate, in horses, donkeys and dogs, promote a complete anesthesia, accompanied with intestinal paralysis.
2. The anesthesia is obtained without a previous period of excitement, on an average after 5-5 minutes in horses, 10 in donkeys, 10 to 15 in dogs.
3. The best dose of chloral by kilogram weight of the animal, is: In horses 0.25 grs. for animals in good condition, and 0.20 for lean and old subjects; in donkeys of 0.35 and 0.30 for pregnant females; in dogs of 0.35 to 0.40 grs.

4. The anesthesia lasts on an average: 2 hours in horses, $2\frac{1}{4}$ in donkeys, $1\frac{1}{2}$ to 2 hours in dogs..

5. Association with subcutaneous injections of morphia does not increase the action of the anesthesia by intraperitoneal chloral.

6. One anesthesia by chloral does not have any influence upon the general condition of an animal, nor does it give rise to any internal macroscopic lesions.

7. Injections repeated at short intervals are dangerous. They have a local irritating action in all the three species of animals and a general toxic action in horses and donkeys.

8. Injections of chloral hydrate are a very good and practical mode of anesthesia for the performance of many operations. —(*Ibid.*)

DIAGNOSIS OF ANTHRAX BY ASCOLI'S METHOD [*Dr. H. N. Buiculesco*].—Notwithstanding the numerous methods of diagnosis, there is none which can be said having all the difficulties of a sure and practical bacteriologic diagnosis. That of Ascoli is probably in our days the one which gives most satisfaction.

The concise history of the various processes that have been recommended is mostly considered by the writer and he finally arrives at the description of the specific researches that he has made, presenting as results the following conclusions:

1. The reaction, with the precipitines in anthrax, indicated by Ascoli, allows a rapid and sure diagnosis, even in the case where the ordinary methods give a negative result.

2. The reaction is positive only with organs which are surely anthracic, and the precipitation takes place immediately or after five minutes. With organs not anthracic or from animals dead from other diseases, the reaction is negative.

3. The reaction is positive with fresh organs, as well as with those in a state of putrefaction (1-12 days).

4. The organ of choice for the reaction is the spleen, as the richest in bacilli and consequently in precipitines. Yet, the skin, feces, intestines, muscles, heart, liver, kidney, lymph glands, blood, marrow of bones, lung, can give the reaction.

5. A positive result is obtained with organs kept for several years in alcohol at 90 degrees. The liquid of preservation gives no reaction.

6. The reaction is positive even with the extracts from spleen, diluted to a limit of one-fiftieth, beyond which the reaction is negative.

7. All sera are not precipitating. Among those of the dif-

ferent species that I have examined (horse, cattle, sheep), that of horse has been found the most active, that of cattle and sheep is inactive.

8. Extracts must not be prepared except with physiological serum.

The reaction seems positive with concentrated extracts of bacilli resembling that of anthrax, but with dilution of the extract to one-twentieth the reaction becomes negative. With extracts of bacilli of anthrax, the reaction is positive even at one one-hundredth.—(*Arhiva Veterin.*)

The following letter from Washington, D. C., to the counsel of the American Association of Pharmaceutical Chemists is self-explanatory:

“IMPORTANT RULING—TREASURY DEPARTMENT.

“Washington, February 3, 1915.

“Charles Wesley Dunn, Esq.,

“32 Liberty Street, New York, N. Y.:

“Dear Sir—Referring to your letter of February 1, asking whether the exemptions contained in Section 6 of the Federal Narcotic Law relating to ‘liniments, ointments, or other preparations which are prepared for external use only, would include rectal, urethral and vaginal suppositories and bougies containing the specified narcotic drugs, you are advised that this office interprets this language to mean that any liniment, ointment, or other preparation containing drugs not specifically exempt by the law, used for oral, nasal, aural, ocular, rectal, urethral or vaginal administration, is not an external use of such liniment, ointment or other preparation, and is, therefore, not exempt from the provisions of this law.

“Respectfully,

“W. S. OSBORN, Commissioner.”

(*American Association of Pharmaceutical Chemists.*)

VETERINARIAN OCCUPIES EXALTED POSITION OF GOVERNOR: We are advised by our good friend, Dr. Henry Nunn, Assistant State Veterinarian, of Oregon, that that commonwealth has elected a veterinarian as its chief executive. Under date of February 8, Dr. Nunn writes: “Oregon has elected for its Governor, Dr. James Withycombe, ex-State Veterinarian. Who dares to say that we have not good material in our ranks?”

CORRESPONDENCE.

FOOT AND MOUTH DISEASE.

Norwalk, Ohio, January 22, 1915.

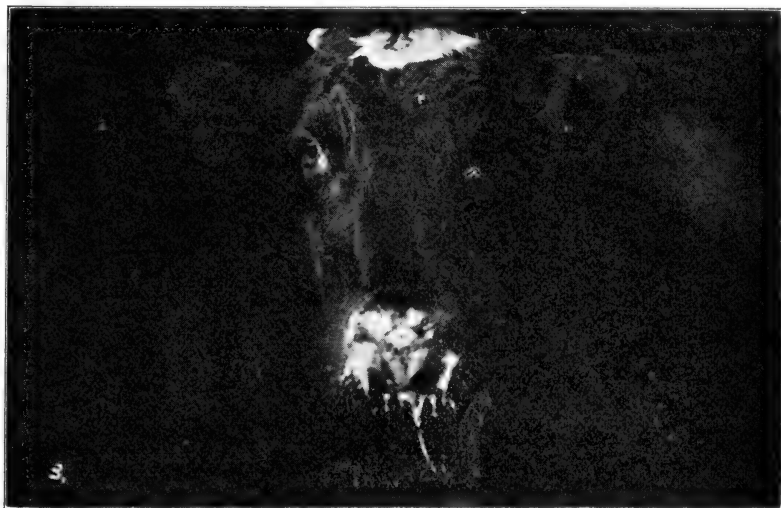
The AMERICAN VETERINARY REVIEW, New York:

I am sending you a set of pictures that may be of some interest to the veterinary profession who may not have been able to see any of the "Foot and Mouth Disease." I think these pictures are very good and also very instructive. They were taken at

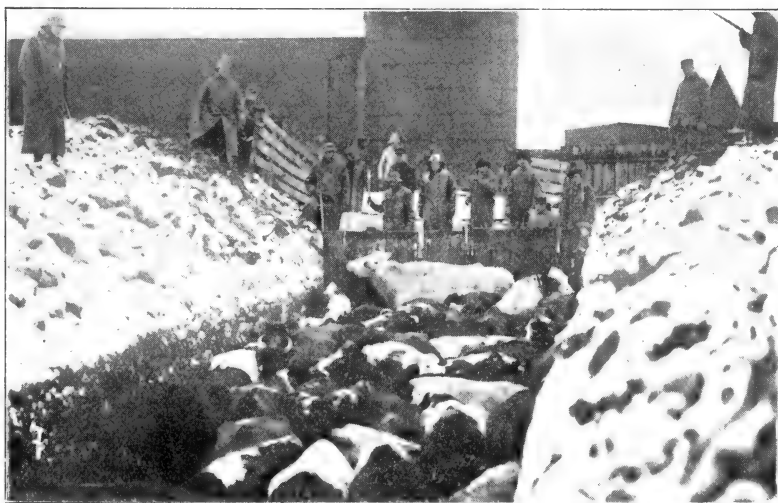


Case Showing Typical Symptoms.

Sandusky, Erie County, Ohio. The herd consisted of 67 head of cattle, 47 of which were dairy cows, 2 bulls and the balance were young stuff, also 25 hogs. Property of Christian Toft, dairyman. They were quarantined December 11 by Dr. Broerman and Dr. H. Fulstow, appraised December 12, slaughtered December 19, and disinfected December 29, 1914. Slaughtered by Drs. E. I. Smith and W. O. MacHugh (Federal Inspectors)



Better Marked Case.



Cattle in Trench Before Slaughter.



Cattle in Trench After Slaughter.

and Drs. A. W. Franks, P. H. Fulstow and J. W. Reeder (Local Inspectors). They were appraised at \$5,164. Burial expense about \$150. Buried in a trench 12 feet wide, 8 feet deep and 70 feet long in 100 bushels of quicklime.

Yours fraternally,

FULSTOW & FULSTOW.

DALLAS, TEXAS, February 16, 1915.

Editor, AMERICAN VETERINARY REVIEW, New York, N. Y.:

DEAR SIR—Dr. W. T. Chrisman has been appointed State Veterinarian of Texas; the Doctor is a graduate of the Western Veterinary College of Kansas City, Mo., class of 1892, is also a graduate in human medicine and pharmacy, he held the chair of human anatomy for six years in the College of Physicians and Surgeons, of Dallas, Texas, is now Dean of the Southwestern Veterinary College of Dallas, and has been instructor on anatomy in that college for six years. Dr. Chrisman has been admitted to the bar to practice law in the State of Texas, and is now associated with one of the strongest law firms in the State.

All of the above helps to make him well qualified to serve the State well as its veterinarian.

It is Dr. Chrisman's intention to get the Sanitary Board out of its old rut and benefit the small stock owner as well as the large. Last year anthrax broke out in twenty-two new counties in Texas, due to the fact that the former State Veterinarian was unable to make a diagnosis of the disease.

E. F. JARREL, M.D.C., D.V.S.

AN APPRECIATIVE LETTER.

S. S. Marina, Port of Baltimore, February 22, 1915.

AMERICAN VETERINARY REVIEW, *New York*:

Gentlemen—Allow me to apologize for not having written you before this date asking you to discontinue sending me the VETERINARY REVIEW, also for not having renewed my subscription to same.

Just a few days before I left Grenada, W. I., I received notice from you intimating that my subscription was due. But being extremely busy getting ready for London, I was unable to write you about same. Upon my arrival in London the War Office appointed me to the above named transport ship, so was unable to write you from there, as I only had a few hours' notice, and having taken this opportunity of notifying you now. Owing to my present occupation my address is uncertain, but will avail myself of purchasing same at the first opportunity, also of being a subscriber when the present war is over, as I am inclined to believe that I may be sent on to France at any time.

Wishing the REVIEW all success in the future, I am,

Yours faithfully,

W. C. STEELE.

FOOT AND MOUTH DISEASE STILL WITH US.—It would seem that the foot and mouth disease situation is not yet cleared up. In fact, the outlook is anything but rosy in that respect. Some states are fairly well cleaned up, but many others still have considerable work ahead of them. Authorities, both state and federal, are still earnestly alert and exerting every effort to prevent anything slipping through the net that was early thrown around the infected areas.

BIBLIOGRAPHY.

THE PRINCIPLES AND PRACTICE OF JUDGING LIVE STOCK.

THE PRINCIPLES AND PRACTICE OF JUDGING LIVE STOCK, by Carl Warren Gay, D.V.M., B.S.A., Professor of Animal Industry, University of Pennsylvania, Philadelphia, Pa. More than 400 pages, with 159 illustrations. New York: The Macmillan Company, 1914.

Appreciating the constant extension of the live-stock industry, the author realizes the necessity of a scientific basis upon which to study the judging of live stock; which, in other words, is the appreciation of quality in an animal. In order to appreciate the particular quality desired in a certain animal for a particular purpose, a knowledge based upon scientific principles must be acquired. These principles and this knowledge is set forth in this work of Professor Gay, in which, it is his desire to keep the work thoroughly practical, yet give it a touch of the technical.

The author has divided the work into seven parts, under the following captions: I. *The Principles of Judging*; II. *The Practice of Judging*; III. *Judging Horses*; IV. *Judging Cattle*; V. *Judging Sheep*; VI. *Judging Swine*; VII. *Judging Breeding Animals*. These subjects are filled out with chapters on histology, anatomy, physiology, reproduction, pathology, etc., that make the work sufficiently technical for veterinarians, while thoroughly practical in the application of its principles; and the great number of illustrations are extremely interesting and instructive.

In Part II., *The Practice of Judging*, under the head of "Definition and Procedure," the author says: "Judging is not an exact science in which determinations can be made with mathematical precision, but results are more or less approximate, depending upon the accuracy with which observations are made and the correctness of the judgment with which decisions are reached. Discrepancies may be due either to inaccuracy in observation, to error in judgment or both." In the first place, judging consists of making a thorough analysis of each individual, then measuring them to the ideal standard. In order to be able to do this, it is obvious that a judge must have a definite notion of what constitutes merit; full information as to indi-

vidual excellence, market demand and breed requirements. A student of the principles laid down in the work of Prof. Gay, who is a *keen observer*, will become a connoisseur, as it requires the closest and most accurate observation to be able to interpret the qualities that stand for merit in many instances. After all it is a study of *fitness*, the adaptation of the thing to the purpose for which it is intended. What might be of the highest merit in a plantation mule, would not commend itself to the saddle horse, and *vice versa*. A similar comparison might be made between a beef and a dairy cow. All veterinarians will benefit by reading *Gay's Principles and Practice of Judging Live Stock*, whether they ever expect to act in the capacity of judge or not, in the usual acceptation of the word, because they are *all* judges of live stock at all times. And that is what makes the book so fascinating to read. The publishers have done their part of the work in an excellent manner. The book is bound in cloth, olive green, printed on good smooth paper, in clear sharp type and splendidly illustrated.

A SYSTEM OF VETERINARY MEDICINE.

A SYSTEM OF VETERINARY MEDICINE, by various writers. Edited by E. Wallis Hoare, F.R.C.V.S., Lecturer in Veterinary Hygiene, University College, Cork; Late Examiner in Anatomy, Royal College of Veterinary Surgeons; Late External Examiner in Veterinary Toxicology, Jurisprudence and Sanitary Law, University of Liverpool; Author of *Veterinary Therapeutics and Pharmacology*. Volume II: General Diseases. Over 1,600 pages, 1915. Chicago: Alexander Eger.

In our July, 1913, issue we reviewed Volume I. of this excellent work, consisting of over 1,300 pages, on *Microbial Diseases*, and now it is our privilege to peruse the second volume of more than 1,600 pages, devoted to the consideration of *General Diseases* of the various domestic animals. Keeping the needs of the clinician in view, the author has dealt with the diseases of the various organs in each specie, in separate sections. Thus the work represents a complete guide to the maladies of the horse, ox, sheep, goat, pig, dog, cat and bird. Showing the importance of the *Diseases of the Digestive System in the Horse*, from the editor's standpoint, he has placed them at the very beginning of this excellent volume, and endeavored to enlist the same deep interest in the subject on the part of his readers, that he himself feels. Beginning with the *Diseases of the Mouth*, all of which are carefully considered, he passes in succession, carefully, over

the *Diseases of the Salivary Glands, Diseases of the Tonsils, Diseases of the Pharynx, Diseases of the Oesophagus, Diseases of the Stomach, Diseases of the Intestines* of the horse, and then, in the same order, covers the diseases of the digestive system in cattle, in sheep, in goats, in pigs, the dog and cat, and in the same separate manner deals with the diseases of each of the systems in various species of animals. So that instead of having to read all about a disease as it affects the *different* animals when looking for some specific information in regard to a particular *class* of animal, the practitioner or student goes right to the animal in question, and reads what he wants to know in connection with a certain disease. Take for example *colic* in the horse. You turn to *Diseases of the Digestive System* in the horse, and you find *colic* as it applies to the horse, specifically dealt with. And we might add right here, before getting on another phase of the book, that the section just referred to is most excellent, Reeks being freely quoted from. In fact, as we stated in our review of Volume I., *all* the subjects are ably dealt with; as the editor has selected for each part of the work a member of the profession who makes that part his specialty, and is therefore possessed of more than the ordinary knowledge on the subject. Take for example the chapters on *Parasites and Parasitic Diseases*, by A. W. Noël Pillers, F.R.C.V.S., 165 pages, covering every phase of the subject, the bibliography denoting an immense amount of careful reading by the author in the compilation of his facts, which gives the possessor of *Hoare's System of Veterinary Medicine* a reliable text-book on this important branch of veterinary practice. The same applies to *any* part of the work, which is indispensable to the progressive practitioner. The publisher is entitled to a great amount of credit in placing these two handsome volumes within the reach of practitioners and students of veterinary medicine, and his efforts should be encouraged by the patronage and support of the profession.

DISEASES OF SWINE

DISEASES OF SWINE, with Particular Reference to Hog Cholera. By Charles F. Lynch, M.D., D.V.S., of the Terre Haute Veterinary College, Terre Haute, Indiana, with a chapter on Castration and Spaying by George R. White, M.D., D.V.S., State Veterinarian, of Tennessee. Octavo volume of 741 pages with 120 illustrations. Philadelphia and London: W. B. Saunders Company, 1914. Cloth, \$5 net.

With the great advances in hog raising as an industry, intimate knowledge of the diseases in those animals continues to

increase in importance. The veterinarian who does not understand the ailments of hogs, is surely at a great disadvantage, especially in the corn belt. That fact has long been appreciated by veterinary schools, who have seen to it that the diseases of hogs have been carefully dealt with in their courses. One of the men intrusted to impart knowledge on this subject to men acquiring veterinary educations is the author of this work, who has been actuated by such teaching to prepare a text-book that will give an intelligent interpretation of recent advances in the study of pathology of the diseases of the hog, and the application of the newer therapeutic discoveries in their treatment. As stated in the heading, particular reference is given to hog cholera. That is but natural in view of the fact that hog cholera claims more victims than all other diseases to which hogs are heir, put together. The development of the use of hog cholera serum, and its great value in controlling this disease, is fully appreciated by both veterinarian and farmer. It has also been clearly demonstrated that it is a dangerous treatment, except in the hands of a skilled veterinarian. The moral is, acquire the greatest possible skill, and remove the possibility of this treatment being administered by the farmer, further and further away from him. With a text-book devoted to the diseases of swine in the hands of the veterinary students, and a man skilled in that branch of veterinary medicine attached to the faculty of all veterinary colleges, modern veterinarians will go into the field prepared to save the hog raisers thousands of dollars yearly, and incidentally will broaden their own field of usefulness and materially add to their incomes. *Lynch's Diseases of Swine*, with a chapter on castration and spaying, by George R. White, is a valuable addition to the veterinary literature of the day in the English language, and every veterinarian will be better equipped by possessing a copy.

A MANUAL OF NORMAL HISTOLOGY AND ORGANOGRAPHY.

Third Edition, Thoroughly Revised.

- A MANUAL OF NORMAL HISTOLOGY AND ORGANOGRAPHY, by Charles Hill, Ph.D., M.D., Professor of Histology and Embryology, Chicago Veterinary College; Formerly Assistant Professor of Histology and Embryology, Northwestern University Medical School, Chicago. Third edition thoroughly revised. 12mo of 483 pages, with 312 illustrations. Philadelphia and London: W. B. Saunders Company, 1914. Cloth, \$2.25 net.

This excellent little work from the pen of Professor Hill presents the fundamental facts in histology in as clear and concise

a manner as is possible. The figures have been carefully selected to illustrate the salient points of the text, and to facilitate their study, descriptive notes are placed on the figures, rather than as footnotes. The author believes most thoroughly in the laboratory method of study, and this little work is admirably fitted for that class of study, dealing with the fundamental principle of laboratory technique without making the subject too extensive. The book is divided into seventeen chapters, with sixty-five subdivisions. New text not included in former editions has been added, on the stomach in ruminants and on the hoof of the horse. Bound in black cloth, and printed on good smooth paper in excellent type and generously illustrated, the work is in keeping with the usual high grade of the publishers.

PROFESSOR WILSON NEEDS CLOSER ACQUAINTANCE WITH VETERINARIANS: Reading in the Sioux City, Iowa, *Tribune* the address of Prof. James W. Wilson, of the Agricultural College, Brookings, S. D., before the Interstate Association of Farmers and Breeders, we were impressed with the soundness of Professor Wilson's judgment on some things, and his utter lack of comprehension of the veterinary profession of to-day. We would urge that the professor cultivate a closer acquaintance with veterinarians, and assure him that he will be relieved to find that they are a scientific body, well versed in diseases of *all* animals, thoroughly conversant with sanitary science, and that the "hoss doctors" he refers to belong to a past generation.

WESTERN ONTARIO VETERINARY ASSOCIATION.—This association met at Chatham, on February 8th, in annual convention. Papers were read by Dr. Bannister, of Ridgetown, and Dr. Rowe, of Chatham. The following officers were elected: President, Dr. A. M. Wilson, Wheatley; Vice-President, Dr. Steen, Harwich; Secretary-Treasurer, Dr. Rowe, Chatham; Trustees, Dr. Anderson, Comber; Dr. Rhody, Chatham; and Dr. Brown, Essex.

SIGNAL HONOR FOR DR. WINCHESTER is the heading of an article in the Lawrence, Massachusetts, *Telegram*, in which it states that the Veterinary Department of the University of Toronto has adopted for a text book in lectures on jurisprudence, two cases and the supreme court finding, concerning the death of horses from electric current in street car tracks.

OBITUARY.

WILLIAM ALBERT LABRON, V.S.

Dr. William Albert Labron was born at North Ensley, Ontario, April 16, 1857, and died January 2, 1915. He received his early education in his native town after which he entered the Ontario Veterinary College, Toronto, Ontario, where he enjoyed the respect of the student body and was graduated in 1881. The same year he concluded to come to the United States to practice his profession and located in Xenia, Ohio. Though an entire stranger, his frank and genial manner, upright and honorable business methods, coupled with his skill as a veterinarian soon gained for him a lucrative practice and the respect and honor of the community. As years passed he became more widely known until his practice reached the adjoining counties. He was probably the most widely and favorably known professional man in that city. He was a man of clean life and high character and greatly esteemed by the community. He was active in his profession and a charter member of the Ohio State Veterinary Medical Association and served as its secretary from 1886 to 1888. Dr. Labron had been failing in health for the past two years. On December 24, 1914, while in the country attending a patient he was stricken with paralysis, and he was unable from that time even to speak. He was taken to his home in the city where he quietly rested until January 2, 1915. He is survived by an aged mother, wife, one daughter and one son.

Therefore be it resolved that the profession has lost a valuable and honorable member.

And be it further resolved that the above be spread upon the minutes of the Ohio State Veterinary Medical Association and a copy be sent to the family.

WALTER SHAW, Chairman.

A. P. ARMSTRONG.

Dr. A. P. Armstrong died at his home in Ashland, Illinois, December 31, 1914, at the mature age of 74 years. Death followed a stroke of paralysis sustained several days previously,

from which he never regained consciousness. Dr. Armstrong was one of the best known men in Cass County, and was the father of Dr. Chas. A. Armstrong, of that place. He was also a brother of Duff Armstrong, whom Abraham Lincoln defended and proved innocent of a murder charge, by using an almanac to prove that the moon was not shining on the night of the alleged crime. Mr. Lincoln spent much of his time at the Armstrong home in early manhood.

DR. RUTHERFORD ADDRESSES MEMBERS OF HIS STAFF AT FAREWELL DINNER: We read with interest in the Calgary *Daily Herald*, of February 19th, of a dinner given at the Palliser Hotel, that place, on the evening previous, to eight members of the Canadian Pacific Railroad staff, who, with Dr. Rutherford, have been working in the Department of Natural Resources; they having enlisted with the Thirty-first Battalion, and will soon depart for Europe to serve their country. Each man received from his previous office companions something which was deemed useful and necessary to him at the front. Dr. Rutherford made a strong address.

NEW YORK CITY ALUMNI ASSOCIATION OF IOWA STATE COLLEGE: The local alumni of the above institution held an informal dinner at the Hotel Brevoort, in New York City, on February 12, 1915. With some few exceptions, the classes from 1885 to 1914 were represented. Twenty-four members were present, representing the schools of Home Economics, Science, Civil Engineering, Electrical Engineering, Mechanical Engineering, Agronomy and Veterinary Science. Two visitors were present. Crittenden Ross ('14) represented the school of Veterinary Science and pronounced the occasion a most enjoyable one.

THE ACTION OF ARSENICAL DIPS IN PREVENTING TICK INFECTION is the title of an article by H. W. Graybill, Assistant Zoologist, Bureau of Animal Industry, U. S. Department of Agriculture, which appeared in the *Journal of Parasitology* of September, 1914. We were favored with a reprint from the author, which we have read with great interest. Also his article on *Repellants for Protecting Animals from Attacks of Flies* in the *Bulletin* of the U. S. Department of Agriculture.

SOCIETY MEETINGS.

VETERINARY MEDICAL ASSOCIATION OF NEW YORK CITY.

(December Meeting.)

The regular monthly meeting of this association was called to order by the president, Dr. McKinney, December 2, 1914, at 8.45 p. m.

The minutes of the November meeting were read and approved.

Dr. J. A. McLaughlin then explained that he had prepared a paper on the questions of "The Dog Must Go," which ultimatum was credited to Dr. S. S. Goldwater, Commissioner of Health of New York City. Dr. McLaughlin explained that he had endeavored to find out Dr. Goldwater's attitude on this question, but until the day previous to this meeting had failed to get an answer. He then received a communication from the commissioner stating that no radical measures were contemplated on the dog question, but stated that personally and officially he would do everything in his power to prevent the spread of rabies.

The secretary also read a letter from the commissioner, in which he also stated that he was not an extremist, and did not contemplate any drastic action.

Dr. McLaughlin stated that on the strength of these statements he would not read the paper he had prepared but would suggest that the Commissioner be commended for his efforts to prevent the spread of rabies.

Dr. Ackerman said that the regulations regarding the dog are a step in the right direction and said that on his recent trip to Europe he was much interested in the strict regulations applying to the dog. There is practically no rabies in existence in European cities.

Dr. McKinney said that beside muzzling the dogs all police officers should have the power and authority to destroy any dog found unmuzzled in a public street.

Dr. Ackerman again stated that 14 police horses are at present under quarantine for rabies.

Dr. Gill then stated that before discussing the commissioner's attitude on this question it would be best to know just what that attitude is.

On motion the privilege of the floor was extended to visitors.

Dr. De Vine said that the commissioner is a very busy man and has a vast amount of work and that all his views as expressed are sound and should be endorsed.

Dr. McKinney said that if it met the approval of the association he would appoint a committee to interview the commissioner and get his views on the dog question.

Dr. Gill made a motion that this be done which was seconded and unanimously carried.

The president appointed Drs. Cochran, McLaughlin and Ellis.

Dr. Childs, of the A. S. P. C. A., said that of the great number of dogs collected by the Society a very small percentage were affected or even suspicious of having rabies.

Mr. William J. Kent, of New York City, was then introduced and thanked the association for the privilege of addressing it on the subject of "Horse-Shoeing in Many Countries."

This proved to be a very interesting address and traced Mr. Kent's own experience as a horse-shoer in all parts of the globe. He explained the times down to the present, and also exhibited some interesting horseshoes. Mr. Kent also advocated that horse-shoeing should be taught in all veterinary schools by a practical horse-shoer. Mr. Kent was tendered a unanimous vote of thanks.

The board of censors then reported that the charges against Dr. H. Stark were not sustained and found him not guilty.

The charges against Dr. J. E. Crawford were sustained and he was found guilty, but the censors explained that in their opinion it was more an error in judgment on Dr. Crawford's part as he had good-naturedly tried to aid a non-licensed man. The censors recommended that if Dr. Crawford would promise that there would be no recurrence of this act that no further action be taken. Dr. Crawford acquiescing to this in open meeting.

Dr. Gill moved that the report regarding Dr. Stark's case be referred back to the board of censors for the purpose of hearing Dr. Smith, who was the primary cause of the charges being preferred—seconded and carried.

The board of censors announced that they would ask Dr. Smith to appear before them on December 15th.

Dr. Gill moved that the report of the censors regarding Dr.

Crawford be accepted and a copy of the same sent to Dr. Crawford—seconded and carried.

The prosecuting committee then made their annual report, which was, on motion duly made, seconded and unanimously carried, ordered received and spread upon the minutes.

The secretary-treasurer's report which had been audited by the finance committee was then read. There is a balance of \$80.60 in the treasury, and a membership of 63 active and six honorary members.

This report was, on motion, seconded and carried, ordered received.

The election of officers then took place and resulted in the unanimous election of Dr. H. D. Gill as president.

Dr. C. S. Chase was unanimously elected as vice-president.

Dr. R. S. MacKellar was unanimously re-elected secretary and treasurer.

Under the head of new business, Dr. Gill stated that it might be well to mention foot and mouth disease, and suggested that it would be interesting and instructive for the members to see some cases. The chronic cases are, unless one is quite familiar with the disease, liable to be mistaken and overlooked. A general discussion of this disease followed.

Dr. Maffitt Smith's resignation was read and, on motion, seconded and carried, was ordered laid on the table.

Dr. H. D. Gill was then installed as president and made a few well-chosen remarks.

A vote of thanks was tendered the retiring officers.

There were over sixty members and visitors present.

Meeting adjourned. ROBT. S. MACKELLAR, Secretary.

(January Meeting.)

The regular monthly meeting of this association was called to order by the president, Dr. H. D. Gill, in the lecture room of the New York American Veterinary College, Wednesday evening, January 6, 1915, at 9 p. m.

The secretary called the roll and verified the addresses of the members.

The minutes of the December meeting were read and approved.

Dr. Gill stated that Dr. McNeil was unable to be present, but he fully expected that he would present his paper at the February meeting.

Dr. A. J. DeFosset, of the Bureau of Animal Industry, was then introduced and gave a very interesting and instructive address on foot and mouth disease.

The doctor stated that this disease had appeared in this country at rare intervals. That it is very contagious.

The first symptoms are the smacking of the lips and the profuse, frothy salivation. The vesicles are prominent and well elevated and soon break, leaving painful, raw surface. The most prominent lesions are found on the upper dental pad—udder—foot and coronet.

In hogs the feet are very badly affected. The period of incubation varies from three to five days, but may run as long as twenty-five days.

The present outbreak was first recorded on Long Island November 12, 1914, and was directly traceable to the Buffalo Yards.

The herds on Long Island were affected almost simultaneously.

A great many lesions are found which are of traumatic origin and may be mistaken for this disease. Have found odd lesions on the first examination of a herd which afterward came down with the disease. In some herds it occurs in a mild form, probably due to inoculation. The mortality in western New York has run from 5 to 10 per cent., and in this section it will probably be less than 2 per cent.

The people handling the animals as a rule are ignorant of the disease and do not realize the danger of communication.

It was explained that while the *usual* means of communication of this disease was by cattle passing through stock yards where infected cattle had been, or in cars used in transportation, *inoculation* generally comes from the milker's hands. The essayist said that he had inoculated a calf by rubbing the membranes of the mouth with a nail file and introducing saliva from a diseased animal. Had even succeeded in inoculating another calf by simply rubbing the gums with a bunch of alfalfa hay smeared with saliva. One attack does not preclude another, as there is no immunity and the disease may return in two or three weeks. An animal may be dangerous for a year or more.

Dr. Chase stated that as cattle affected are anemic and emaciated, it suggested to his mind that there must be a blood change, but it was stated that this has not been tried out.

Dr. Griessman asked what harm resulted from the con-

sumption of milk and meat of diseased animals. It was stated that children are affected by raw milk. The milk from diseased animals has the appearance of colostrum.

This outbreak was traceable from Michigan to Buffalo, N. Y., and Dr. Gill stated that in nearly every case occurring on Long Island the origin of the same was traced to Buffalo, but some outbreaks were due to human carriers. Some of the dairy men have been using antiseptic agents in the line of treating the disease.

Dr. T. E. Smith, when asked about the outbreak in the vicinity of Jersey City, said that he had little to add to what had been said. Attributed the spread of the disease to attendants visiting other dairies. In the first outbreaks found the owners treating the mouths and feet.

Dr. DeFosset was tendered a unanimous vote of thanks.

The board of censors reported favorably on the application of Dr. W. H. Wright, of Long Island City, N. Y., and he was unanimously elected to membership.

A letter from Mr. Waldo J. Morse, Jr., asking that he be furnished a copy of the findings of the board of censors in the case of Dr. J. E. Crawford was read by the secretary.

It was regularly moved and seconded that this letter be laid on the table; and this motion was amended that Mr. Morse be refused a copy of the minutes of the board of censors. This amendment was accepted and seconded and carried. The motion as a whole was then carried.

A letter from Dr. Cavazzi, in which he stated that he had been restored to citizenship by Gov. Glynn, and asking that this association recall its action in the steps taken to have his license revoked was read and referred to the board of censors.

Dr. Cochran reported that Dr. Assing had stated to him that Dr. Smith, who was Dr. Stark's assistant, had apologized to him and he asked that no further action be taken.

Dr. Stark then stated that he believed that he had been injured to some extent by the charges made, and demanded an apology from Dr. Assing, and asked that the chairman of the board of censors request Dr. Assing to make such apology.

Meeting adjourned.

ROBT. S. MACKELLAR,
Secretary.

MAINE VETERINARY MEDICAL ASSOCIATION.

The quarterly meeting of the Maine Veterinary Medical Association was held at the New Augusta House, Augusta, January 27, 1915. The secretary called the meeting to order at 3.15 p. m., and read a telegram from the president, Dr. Jervis, stating that he would be late in arriving. The secretary called for the election of a temporary chairman as both the president and vice-president were absent. Dr. L. Sherman Cleaves was elected temporary chairman. Roll call: Drs. C. L. Blakely, P. R. Baird, L. S. Cleaves, W. H. Corey, C. F. Davis, H. N. Eames, W. E. Fairbanks, L. K. Green, G. R. Inglis, H. S. Irish, H. B. F. Jervis, A. Joly, W. H. Lynch, M. E. Maddocks, A. L. Murch, J. A. Ness, H. T. Potter, W. H. Robinson, E. E. Russell, C. L. Ryan, H. L. Stevens, C. W. Watson, G. F. Wescott, H. B. Wescott.

The minutes of the October meeting were read and accepted.

Dr. M. E. Maddocks, chairman of the entertainment committee gave his report. Dr. Maddocks stated that the ladies would be entertained by Mrs. Maddocks, Mrs. Blakely and Mrs. Joly in the afternoon and that the banquet would be served at the Augusta House at 8 p. m.

Two applications were laid over until the April meeting, as none of the members of the executive were present.

The secretary read his annual report and it was referred to the executive committee.

A motion to suspend the rules and invite the New Livestock Sanitary Commissioner Hon. Boyden Bearce to address the association was carried, and Dr. Joly was delegated to escort the Commissioner before the meeting. Mr. Bearce stated that the duties of the office were not as yet perfectly clear to him, but that he would like to have the support of the veterinarians in carrying out the work of his office; and he promised his support and good will to all. A rising vote of thanks was extended Mr. Bearce for his remarks and his friendly spirit and all members pledged him their support in his work.

Election of officers: President, Dr. L. S. Cleaves, Bar Harbor; Vice-President, Dr. W. H. Robinson, Portland; Secretary, Dr. M. E. Maddocks, Augusta; Treasurer, Dr. M. E. Maddocks, Augusta.

The newly elected president, after a few brief remarks, stated that he would announce the appointment of the committees later.

Bills presented by the secretary were voted to be paid on approval of the executive committee.

On the motion of the secretary, Dr. Wescott, it was voted that

we have an annual report printed and that a committee be appointed to look after the same. It was voted that the officers of the association serve on this committee.

A vote of thanks was extended to all the retiring officers for the work they had done in the past two years. A letter from Dr. Pugh, of the Massachusetts Veterinary Medical Association, asking for a donation towards the erection of a monument for the late Dr. Salmon was read and voted to send \$10 to Dr. Pugh for same.

Dr. W. H. Corey read a very interesting paper on *Tuberculosis*, which was discussed freely.

Dr. Corey's paper brought up a short discussion on the problems before local boards of health, which was lead by Drs. Eames and Potter.

Dr. P. R. Baird read a paper on *The Veterinary Profession and the Public Health*, which was enjoyed by all.

Dr. H. S. Irish was excused from reading his paper, as he was sick and had to leave the meeting early.

It was voted to hold the next meeting at Waterville April 14, 1915.

Meeting adjourned at 5.55 p. m.

The ladies were entertained in the afternoon by a committee consisting of Mrs. Blakely, Maddocks and Joly. They visited the State House and then were served tea at the home of Mrs. Maddocks, acting as hostess, assisted by Mrs. Blakely and Joly.

At 8 p. m. a banquet was held at the Augusta house. Those present were: Dr. and Mrs. Maddocks, Dr. and Mrs. Blakely, Dr. and Mrs. Joly, Dr. and Mrs. L. K. Green, Dr. and Mrs. G. F. Wescott, Dr. and Mrs. W. H. Robinson, Dr. and Mrs. H. L. Stevens, Dr. Salley and Miss Salley, Dr. H. B. Wescott and Mrs. W. E. Chandler, Dr. H. B. F. Jervis, Dr. L. S. Cleaves, Dr. W. H. Lynch, Dr. W. H. Corey, Dr. H. T. Potter, Dr. C. F. Davis, Dr. H. N. Eames, Dr. C. L. Ryan, Dr. J. A. Ness, Dr. E. E. Russell, Dr. A. L. Murch, Dr. C. W. Watson, Dr. W. E. Fairbanks, Dr. G. R. Inglis, Dr. P. R. Baird, Mr. Smith, of the Parke, Davis Co., and Mr. Cooper, of the Abbott Alkaloidal Co.

Toastmaster, Dr. A. Joly. Toasts: *The Maine Veterinary Medical Association*, Dr. H. B. F. Jervis; *The Veterinarian—His Duty Towards the Public*, Dr. J. A. Ness; *The Country Practitioner*, Dr. I. L. Salley; *The Horse Versus the Automobile*, Dr. W. H. Lynch; *United States Meat Inspection*, Dr. L. K. Green; *University of Maine*, Dr. H. T. Potter; *The Ladies*, Dr. W. H. Corey.

A rising vote of thanks was extended the banquet and entertainment committee for the splendid evening they had given the members and friends.

H. B. WESCOTT, Secretary.

SOUTH DAKOTA VETERINARY MEDICAL ASSOCIATION.

The first semi-annual meeting of the South Dakota Veterinary Medical Association was held at Redfield, South Dakota, February 2 and 3, 1915. The meeting was called to order by President Dr. J. T. McGilvray, at 2 p. m. of the first day. Over twenty-five members answered to the roll call, which in view of the fact that all trains were running hours behind the schedule time on account of the heavy snow, was considered a very creditable showing.

The President delivered a brief but fitting address, after which Dr. O. C. Selby, State Veterinarian, outlined the legislative work which is now being conducted at the Capitol. At this, the association as a whole had reason to be most hopeful considering the terrible jolt that the legislature dealt to us in 1913 and the adverse conditions under which we have labored for the past year and a half. Yet we have every reason to believe that by our action taken at Mitchell in June, 1913, we have demonstrated to a degree, at least, the absolute necessity of qualified men in the higher state offices who have under their supervision the control and eradication of contagious and infectious diseases.

Dr. E. C. Perisho, President of the South Dakota State College, was present and delivered a most interesting address, putting special stress on the care of the great live stock wealth in the way of preventing the spread of contagions so detrimental to the live stock industry of the state. Dr. Perisho wondered if the time was not ripe for the establishment of the first two years of a four-year course in veterinary science at the State College, and, in connection, the establishment of an animal health laboratory, and asked for an expression from our association. After consideration of his request, a resolution was adopted recommending the immediate establishment of such course and laboratory.

Dr. Smith spoke at length of the federal work in the eradication of hog cholera in Davison County, of which he is in charge, showing that in that county they were losing but approximately 11 per cent. of the hogs vaccinated. This report was indeed gratifying when we consider that only sick herds are vaccinated.

At 8 p. m. the members of the association enjoyed a turkey banquet at the Foster House, Dr. Smith acting as toastmaster.

At 9 a. m. on February 3d, the meeting was again called to order, and after the transaction of the regular business, Dr. C. C. Lipp, of the State College, delivered an address on the production of hog cholera serum and virus at the State College. Dr. Lipp's address was most instructive and interesting in outlining the way in which we might eradicate the disease from the state.

In the afternoon, Mr. Hall, Better Farming Agent of Spink County, gave us a lecture on hog cholera eradication work in that county. The statistics submitted by Mr. Hall collected through his co-operation with the farmers and veterinarians showed that thousands of dollars had been saved the farmers of that county by the use of hog cholera serum and virus.

At 4 p. m. the meeting adjourned.

The annual meeting of the association will be held at Rapid City, July 1st and 2d, 1915. After the meeting the association will travel in a special car through the beautiful Black Hills for a ten-day outing.

Respectfully,

S. W. ALLEN, Secretary.

MANITOBA VETERINARY ASSOCIATION.

ASSOCIATIONS ARRANGING TENTATIVE DETAILS OF AMALGAMATION FOR FOUR PROVINCES.

Federation of the veterinary associations of the four western provinces was discussed at the annual meeting of the Manitoba Veterinary Association in the board room of the Industrial bureau recently. A committee will report on the proposal at the semi-annual session.

In the absence of Dr. W. H. Lee, of Minto, the chair was taken by Dr. S. Martin, Winnipeg.

Officers were elected as follows: President, Dr. J. Mack, Neepawa; vice-president, Dr. F. Bryant, Dauphin; secretary-treasurer and registrar, Dr. W. Hilton, Winnipeg; board of examiners, Drs. W. A. Dunbar, W. A. Shoults and W. Hilton.

The following were elected members of the council: Drs. W. A. Shoults, W. A. Dunbar, W. Hilton and S. Martin, Winnipeg; Dr. J. Mack, Neepawa; Dr. F. Bryant, Dauphin, and Dr. H. H. Ross, Brandon.

The following papers were contributed by members: "Our Duties as Members of the Manitoba Veterinary Association,"

by Dr. J. G. Macdonald, Winnipeg; "Foot and Mouth Disease," by Dr. C. A. Mack, Gilbert Plains; "Report on Case of Urethral Calculi," by Dr. W. Swanson, Manitou; "Pneumonia," by Dr. S. H. Kesten, Winnipeg; "Tuberculosis," by Dr. Schnell, Carberry; "Gastric Tympany," by Dr. S. Martin, Winnipeg; "Contagious Abortion in Cattle," by Dr. C. D. McGilvray, Winnipeg.

Among those present were: Drs. W. A. Dunbar, W. A. Shoults, H. B. Rombough, J. D. McGillivray, C. D. McGilvray, E. S. Bowman, J. B. Still, W. A. Hilliard, W. Manchester, J. G. Macdonald and S. H. Kesten, Winnipeg; Dr. J. G. Cruickshank, Deloraine; Dr. A. G. Husband, Belmont; Dr. J. Swanson, Manitou; Dr. Macintosh, Morden; Dr. C. A. Mack, Gilbert Plains; Dr. J. Mack, Neepawa; Dr. Bowman, Treherne; Dr. W. Leslie, Melita; Dr. M. B. Stiver, Elgin; Dr. W. F. Sirett, Minnedosa; Dr. Schnell, Carberry; Dr. Green, Birtle; Dr. F. Bryant, Dauphin; Dr. J. A. Stevenson, Gretna; Dr. C. Stevenson, Reston; Dr. Kelliher, Portage la Prairie; Dr. H. H. Ross, Brandon; Dr. I. L. James, Gladstone; Dr. I. B. Irwin, Roblin; Dr. J. Young, Rapid City; Dr. J. Kennedy, Elm Creek, and Dr. W. H. Smith, Lenore, and the secretary-treasurer and registrar, Dr. W. Hilton, Winnipeg.

WILLIAM HILTON, Secretary.

MISSOURI VALLEY VETERINARY MEDICAL ASSOCIATION.

RESUME OF KANSAS CITY MEETING.

The semi-annual meeting of the Missouri Valley Veterinary Association at Kansas City, Missouri, February 2d, 3d and 4th, offered many interesting features and was the more valuable in the large attendance, there being some three hundred veterinarians present. The two days program of papers brought forth a number of valuable contributions, including several phases of hog cholera and serum investigation, foot and mouth disease, tuberculosis control and other every-day conditions.

Interest centered in a resume of federal experimental cholera control investigations as voiced by Dr. M. Dorset. The Bureau's endorsement of serum-simultaneous inoculations as the most satisfactory method of control of hog cholera occasioned no little comment. Dr. Dorset drew a clear distinction between cholera control in which saving of swine is the chief idea and cholera eradication in which the elimination of virus is the con-

stant aim. In no uncertain words the proposition was pointed out to be impossible as evidenced in the vain attempts of England, a country much better organized to enforce sanitary regulations than America.

Dr. L. C. Kigin, former State Veterinarian of Nebraska, presented a unique theme in a moving picture illustration of methods employed in Nebraska to control tuberculosis in cattle and hogs. By means of moving pictures stockmen were interested in anti-tuberculosis campaigns with flattering results.

The banquet on the evening of February 3d was largely attended and an enjoyable program included a talk on Fraternal Ethics, by Dr. D. M. Campbell, and one on the Harrison Act, by Dr. N. S. Mayo. Several visiting veterinarians from the British Isles responded to impromptu toasts.

Thursday, February 4th, was given over to Clinics at the Kansas City Veterinary College, lunch being served to the veterinarians by the college and to the visiting ladies by the ladies of the college. The clinic was a continuous offering of diagnostic and surgical cases and was participated in by a large number of the visitors.

CHAS. D. FOLSE.

RESOLUTIONS ADOPTED BY THE UNITED STATES
LIVE STOCK SANITARY ASSOCIATION AT THEIR
EIGHTEENTH ANNUAL CONVENTION, CHI-
CAGO, FEBRUARY 16, 17 AND 18, 1915.

It is the sense of this Association that the Federal regulations for the control and eradication of foot-and-mouth disease shall be recognized by each and every State as the uniform method of controlling and eradicating foot-and-mouth disease in the United States.

We further specifically recommend all susceptible live-stock infected with or exposed to foot-and-mouth disease should be forthwith slaughtered and buried in accordance with regulations of the Bureau of Animal Industry.

We recommend that no State shall take such action as will in any way interfere with the movement of live-stock in transit across such State if shipments are moving in accordance with regulations of the Bureau of Animal Industry.

This Association emphatically condemns all attempts at State legislation or personal action to interfere with the Federal regu-

lations now in force for the control and eradication of foot-and-mouth disease.

Whereas, There is considerable diversity in vogue in the various States covering regulations for the control of contagious and infectious diseases of live-stock, and

Whereas, It is believed more uniform measures should be adopted;

Be It Resolved, That the President of this Association be instructed to appoint a Committee of three for the purpose of drafting and submitting at each annual session some recommendations whereby joint and uniform control of one of the contagious and infectious live-stock diseases may be submitted and recommended to all live-stock sanitarians of the United States.

Resolved, That it being expressed as the sense of this Association that we should favor the joint plan of Federal and Dominion registration of Tuberculosis Free Herds of pure-bred cattle as recommended by the International Commission on Control of Bovine Tuberculosis and urge our Federal Department of Agriculture to get this under way as speedily as advisable.

Be It Further Resolved, That we favor State registration and properly guarded inter-state reciprocity for Tuberculosis Free Herds of Pure-Bred Cattle.

Whereas, Owing to the prevalence of foot-and-mouth disease, and possibilities of recommendations and information being needed by State sanitarians, it is hereby recommended that an Advisory Committee of three be appointed to consult with the Secretary, and

It Is Further Recommended, That the Chairman of this Committee be a member of the Executive Committee.

CONNECTICUT VETERINARY MEDICAL ASSOCIATION.

The annual meeting of the Connecticut Veterinary Medical Association was held at the Hotel Garde, Hartford, Conn., on Tuesday, February 2, 1915. The meeting was called to order at 11.30 a. m. by the president, Dr. G. T. Crowley.

After roll-call the minutes of the previous meeting were read and accepted, the reports of the secretary and the treasurer were read and accepted.

C. Van Vlandren and Harry T. Johnston were admitted to membership.

The election of officers for the ensuing year resulted as follows: President, B. K. Dow; first vice-president, G. E. Corwin, Jr.; second vice-president, H. E. Bates; secretary, A. T. Gilyard; treasurer, Thos. Bland; board of censors, G. W. Loveland, G. L. Cheney, H. Whitney, G. E. Corwin, Jr., and P. T. Keeley.

The meeting was adjourned for lunch at 12.30 and reconvened at 2.30 p. m. It was voted that there be compiled a pamphlet containing the veterinary laws of the state and a list of the licensed veterinarians of the state. Eight hundred of these pamphlets are to be ordered.

Doctors McKiernan, Barger, Becker and Menge, of the B. A. I., who were visitors at the meeting, spoke very interestingly of their experiences in the stamping out of the recent outbreak of foot and mouth disease and their impressions of live stock conditions in Connecticut.

It was decided that the semi-annual meeting be held at Dr. Cheney's office in New Haven, the date to be decided after that of the A. V. M. A. meeting is fixed.

A. T. GILYARD, Secretary.

ARKANSAS VETERINARY ASSOCIATION.

On January 5 and 6, 1915, the eighth annual meeting of the Arkansas Veterinary Association was held at Little Rock at the Hotel Marion.

It was by far the best meeting ever held by this association. The first day being devoted to transacting business, and several papers were read by members. The second day was devoted to clinics which were held at Rice and Merchant's Hospital and Dr. E. S. Rice's Hospital.

Drs. H. E. Rice and J. L. Hearn did several major operations which interested all members.

For the coming year the following officers were elected: Dr. K. G. May, Ft. Smith, President; G. W. Temple, Eldorado, Vice President; and R. M. Gow, Fayetteville, Secretary and Treasurer.

The next annual meeting will be held at Little Rock during the first week in February.

R. M. Gow, Secretary.

FOURTH BIENNIAL CONVENTION OF NATIONAL COUNCIL ALPHA PSI FRATERNITY will be held at Ithaca, N. Y., on March 5th and 6th.

NEWS AND ITEMS.

FIRST BIENNIAL REPORT OF THE OREGON STATE LIVE STOCK SANITARY BOARD: Dated Salem, Oregon, November 30, 1914, this most excellent report reached our desk during the past month, and is a credit to that commonwealth.

DR. CUSTIS GOES TO COLORADO: Dr. Howard H. Custis, Sanford, Florida, has moved to LaJara, Colorado. He was particularly anxious that his REVIEW should reach him at his new address. In concluding his letter he said: "I cannot afford to lose a copy of the Review."

BRISKET DISEASE, by Geo. H. Glover and I. E. Newson, of the Agricultural Experiment Station of the Colorado Agricultural College, is the title of Bulletin 204, issued January, 1915—published by the Experiment Station. It is illustrated and very interesting reading.

THE KEYSTONE VETERINARY MEDICAL ASSOCIATION had a banquet in Philadelphia on the evening of January 16th. State Veterinarian Marshall was the principal speaker. Dr. W. Horace Hoskins was toast master. Among the other speakers was Dr. F. H. Schneider, of the Pennsylvania State Board of Examiners.

CITY VETERINARIAN PROPOSED FOR EVANSVILLE, IND.: One of the amendments to the proposed milk ordinance asks for a veterinarian at \$2,000 a year, whose duties it would be to make the tuberculin test and inspect the dairies, according to information gleaned from the Evansville, Ind., *Press*.

VETERINARIANS CONCLUDE: Bozeman, January 30.—Before closing their convention here the veterinarians of the state yesterday passed a resolution strongly condemning the stockmen of Illinois for refusing to co-operate in the efforts being made to eliminate the foot and mouth disease in the country, and declared that the attitude of the Illinois stockmen was a menace to the stock industry of the United States. * * * —(Butte City, Mont., *Post*.)

DR. LUCKEY TO RESIGN: We learn through the Springfield, Nebraska, *Republican* of January 22, that Dr. D. F. Luckey, State Veterinarian of Missouri, was to tender his resignation to the State Board of Agriculture on January 26th, to accept a business proposition in the East.

DR. WILLIAM CONNOR KICKED BY HORSE: We were grieved to read in the Lebanon, Ind., *Republican* of February 16th that Dr. William Connor, of Jamestown, that state, had been kicked by a horse that he was treating on the day previous. The doctor was unconscious for over two hours, but his condition was not considered serious.

NICELY LOCATED IN THEIR NEW HOSPITAL: In renewing his subscription to the REVIEW, Dr. L. P. Brewster, of Vermillion, South Dakota, says: "We are nicely located in our new hospital, erected last spring. The building is 40 by 60, with concrete floors, electric lights, etc., etc." The doctor has associated with him Dr. Carl Viers, a 1914 graduate of the St. Joseph Veterinary College.

SUMMER SCHOOL FOR VETERINARIANS TO BE HELD AT THE COLLEGE: In the way of further boosting the science of veterinary medicine in Michigan, the Michigan Agricultural College has announced plans for the opening of a summer school for veterinarians at M. A. C. this coming summer. The sessions will begin on June 29. * * * —(Lansing, Mich., *Journal*.)

AN OLD SUBSCRIBER DEAD: Although dead since the end of July, it was not until his subscription expired that we learned from his sister of the death of Dr. A. O. Kennedy, of Columbia, Tennessee. She notified us of his death at the expiration of his subscription with the February REVIEW, stating how much he had always enjoyed reading it.

DR. FORBES RESIGNS STATE POSITION TO ACCEPT POSITION WITH BRITISH GOVERNMENT: The Ft. Worth, Texas, *Record* announces the resignation of Dr. E. R. Forbes, state veterinarian of Texas for the past six years, to accept the position with the British government, as veterinarian in charge of the work of finally passing on horses intended for British and French armies. He reported for duty at New Orleans, La.

SENATE LIVE STOCK AND GRAZING COMMITTEE POSTPONES MEASURE: The senate live stock and grazing committee Friday reported out the bill providing that veterinarians may practice on ten years' experience in the state without passing an examination, for indefinite postponement. The senate concurred and the bill is dead.—(Lincoln, Neb., *Journal*.)

CAMBRIDGE VETERINARIAN APPOINTED: The Baltimore, Md., *Sun* announces the appointment of Dr. William Moore, of Cambridge, that state, to the position of Dairy Farm Inspector, by Commissioner Gorter. The commissioner called for a competitive examination for the position in which fourteen applicants participated. Dr. Moore succeeds Dr. Michael Griffin, who has entered the Federal Government service.

MAKES REPORT ON LIVE STOCK is the caption of a two column article in a recent edition of the Nashville, Tennessee, *Banner*, by Dr. George R. White, State Veterinarian of that commonwealth, in which the doctor deals in a most comprehensive manner with the various diseases of live stock in his state, which he concludes in thanking the commissioner of agriculture for his co-operation in the live stock sanitary control work.

DR. GILYARD SUFFERS BEREAVEMENT IN LOSS OF HIS MOTHER: Dr. A. T. Gilyard, Waterbury, Connecticut, who was recently elected secretary of the Connecticut Veterinary Medical Association to succeed Dr. B. K. Dow (who, after nine or ten years as secretary, was honored with election to the presidency), lost his mother by death on February 1st. The good doctor is tendered the heartfelt sympathy of the entire profession through the REVIEW.

DR. DE VINE ADDRESSES NEW HAMPSHIRE CONVENTION OF AGRICULTURE: Dr. John F. De Vine, professor of obstetrics, clinical medicine and cattle pathology at New York State Veterinary College at New York University, and consulting veterinarian to the New York State Department of Agriculture, addressed the New Hampshire Convention of Agriculture on *Practical Points on Care of Animals and Prevention of Disease*, at its meeting in Manchester on February 10, 1915.

REVIEW ONE OF THE NECESSARY ARTICLES IN HIS OFFICE: Dr. J. R. Kuhns, of Delaware, in renewing his subscription, writes: "It gives me great pleasure to enclose a check for the REVIEW for the year 1915; for it is one of the *necessary* articles in my office."

DR. GILCHRIST DEAD: The Tacoma, Wash., *Ledger* announces the death of former milk inspector, Dr. A. W. Gilchrist, of that place. The doctor was a popular veterinarian, and was known in Tacoma as the father of the tuberculin test in that place. The doctor was only 38 years old, and is survived by a widow and one daughter 1 year old, also by his mother and a sister.

DR. BRATTON AGAIN ILL: Dr. R. L. Bratton, veterinarian, of Rantoul, Ill., was taken to his father's home, says the *Crawfordsville, Indiana, Journal* of January 22d, suffering from a stroke of paralysis. The doctor has had the misfortune during the past year of being infected with glanders, from which he nearly died, and of being exposed to rabies, for which he took the Pasteur treatment. His present condition is serious.

DR. SCHNEIDER APPOINTED ON NORTH DAKOTA EXAMINING BOARD: Through our esteemed friend, Dr. C. H. Babcock, secretary of the North Dakota Board of Veterinary Medical Examiners, we learn that Dr. Ernest Schneider, of Kulm, that state, has been appointed to fill the recent vacancy. Dr. Babcock concludes his communication as follows: "This appointment meets with the approval of the entire profession of our state, as Dr. Schneider is universally admired and respected for his sterling worth as a young professional man."

FERRIS RAPS THE QUACKS—TELLS VETERINARIANS HE'S FOR BILL TO RAISE STANDARDS: Lansing, Mich., Feb. 2.—When Governor Ferris told the members of the Michigan State Veterinary Medical Association at their banquet to-night that they need not be afraid of him in the passage of their bill introduced to-day in the senate, raising the standard of veterinarians, he made friends with them for all life.

"That bill, I take it," said the governor, "is directed against the quack. I am for it and for any bill that will drive the quacks out of all professions."

The governor, President Snyder, of the Michigan Agricultural College, and Senators Woodworth and Hoffma, with L. Whitney Watkins, were the chief speakers.—(Detroit, Mich., *Free Press*.)

THREE GET COMMISSIONS—FIRST GRADUATES OF ONTARIO VETERINARY COLLEGE TO BE HONORED: Principal E. A. A. Grange, of the Ontario Veterinary College, received word recently from A. R. B. Richmond, a graduate of 1911, that H. B. Collett, J. MacBride, and himself, all 1911 graduates of the Ontario Veterinary College in Toronto, have been gazetted in the Imperial army corps with the rank of first lieutenant. They were transferred from the first contingent at the direct request of the War Office, and were to leave for France in a few days in charge of a draft of 250 men. This is the first time that commissions have been granted to graduates of the Ontario Veterinary College in the British army.

Previous to their departure with the first contingent, Messrs. Richmond and MacBride were employed as inspectors by the Civic Health Department. Both are Scotchmen, hailing from Edinburgh. Lieut. Collett was employed by the Dominion Government in connection with the Health of Animals Department. He had been working in Vancouver, and is a son of the British representative in British Honduras.

INVITATION FROM THE VETERINARIANS OF THE MISSOURI VALLEY: The following whole-souled invitation to the A. V. M. A., having reached us *after* our February number was out, we give it publicity in this, the following number:

"KANSAS CITY, MO., January 25, 1915.

"Fellow Members of the A. V. M. A.:

"Now that a New Orleans meeting is not feasible this winter, another place must be chosen for holding the next regular meeting. The Veterinarians of the Missouri Valley are desirous that the meeting be held in their midst, and invite you to cast your vote for a central location. The association has met on both the western and eastern coasts since it convened in this part of the country. Kansas City is convenient for a large majority of the members and offers its hospitality.

"C. J. SIHLER, President of the Missouri
"Valley Veterinary Association.

"A. T. KINSLEY,

"F. F. BROWN,

"S. STEWART."

INVITATION FROM CALIFORNIA COMMITTEE OF A. V. M. A. AFFAIRS: The following cordial invitation from the above committee, dated Berkely, California, was received *after* our February number was out; and while it is probably a member's letter which may have been received by A. V. M. A. members in general, its reproduction here will bring it before the non-members throughout the country:

"The veterinarians of the Pacific Coast have extended to the A. V. M. A. a most cordial invitation to meet in San Francisco at any time this year that the executive committee may deem desirable. However, an early decision as to the date would be expedient in order that suitable accommodations for the association may be reserved. I am informed that some prominent A. V. M. A. members are still pulling for New Orleans as a meeting place with the idea of holding two meetings in 1915. The following excerpt from a letter written by Dr. J. F. Douglass, of New Orleans, chairman of the Local Entertainment Committee, explains the inadvisability of doing this:

" 'I think that I express the sentiments of a large majority of the profession here that it will be best to abandon the 1914 meeting all together and let the 1915 meeting go to San Francisco (where it seems everybody wants to go, including myself), and let New Orleans try for the 1916 meeting, to be held during the winter, where it will have a double attraction for the Northern folks and where we can show ourselves off to some advantage.'

"The third week in June the National Association of Medical Milk Commissions will meet in San Francisco. Since many veterinarians are associated with this organization, the last of June or the first of July would be an attractive time for the A. V. M. A. However, we will welcome you at any time. Write the executive committee through Secretary Mayo and make it clear that you want one meeting and that held in San Francisco, where you may have the opportunity of enjoying the Exposition and its many attractions.

"Cordially yours,

"California Committee on A. V. M. A. Affairs,

"Per C. M. HARING, Chairman."

HAS ENJOYED READING REVIEW FOR MANY YEARS: Dr. Henry Nunn, Assistant State Veterinarian of Oregon, says in renewing his subscription: "I have enjoyed reading the REVIEW for many years, and intend to continue reading it as long as you publish it."

PROPOSED STATE LEGISLATION (NOW PENDING) RELATING TO
BIOLOGICAL PRODUCTS.

Arizona.

Senate Bill 58, by Mr. Garvin, provides for the sale by the State Veterinarian at actual cost of hog-cholera serum.

California.

Senate Bill 1006, by Mr. Purkitt, referred to the Committee on Agriculture.

AN ACT prohibiting the preparation, sale, barter, shipment or exchange of any worthless, contaminated, dangerous, or harmful hog cholera serum or virus; requiring every establishment for the preparation of hog cholera serum or virus to be inspected and licensed by the director of the Agricultural Experiment Station of the University of California; and providing penalties for violation of any of the provisions hereof.

Senate Bill 1008, by Mr. Purkitt, referred to the same Committee. Amends the hog-cholera serum act of 1911. A copy has not yet been received.

Idaho.

House Bill 156, by Committee on Live Stock. Requires all hog cholera serum sold in Idaho to be produced under a license issued by the U. S. Bureau of Animal Industry. Declares that the use of hog cholera serum is not restricted in any way. Provides also as follows:

Section 3. The sale, distribution or use of hog cholera virus is prohibited except under the following conditions, to wit: (a) All virus used for immunizing hogs against cholera shall be administered by graduate veterinarians to whom a permit has been issued by the State Veterinary Surgeon, such permit to be issued only after satisfactory proof of the fact that said veterinarians are qualified to administer hog cholera virus. (b) No virus shall be shipped into the State or sold or distributed within the State of Idaho unless consigned to, sold or distributed by a veterinarian holding a permit from the State Veterinary Surgeon. (c) Any veterinarian administering virus and serum shall immediately render a full report to the State Veterinary Surgeon, giving names, addresses of owners and number of hogs treated.

Iowa.

House File 259, by Mr. Brady, referred to the Committee on Agriculture. Amends the present hog cholera serum law to read as follows:

Section 2. That Section twenty-five hundred thirty-eight-w 3 (2538-w 3) be and the same is hereby amended by striking out the entire of said section and inserting in lieu thereof the following:

"It shall be the duty of the director of said laboratory to establish and declare the standard degree of potency of hog cholera serum for successfully treating, curbing and controlling hog cholera or swine plague. He shall have the power to make such rules and regulations governing the manufacture of serum in laboratories located within the state and doing an interstate business, as he deems necessary to maintain the potency and purity of their product. He shall have the right himself or through a duly appointed inspector to make such inspection of commercial serum plants doing business under a state permit and of all distributing agencies representing serum manufacturers located outside of the state as will insure a full compliance with the rules and regulations made to govern same. A person, firm, company or corporation before selling or offering for sale within this state any hog cholera serum, shall first make application to the director of the laboratory herein created, for permission to sell the same in the state. Said application shall give the name of said person, firm, company or corporation with its place or places of business.

"Such other information and samples of serum shall be furnished whenever required by the director. If the director is satisfied that said person, firm, company or corporation is fit, proper and reliable, upon the furnishing of a bond in the sum of one thousand dollars (\$1,000) by said applicant which bond shall be approved by the director, he shall issue to said person, firm, company or corporation, a permit to sell said serum within the state for a period of one calendar year or part thereof, for which permit he shall collect the sum of twenty-five dollars (\$25), which money shall be deposited and handled the same as moneys received for the sale of serum. At the time of the issuing said permit, the said director shall deliver to said applicant a statement showing the standard or degree of potency of hog cholera serum as established by said director and said permit may at any time be revoked and cancelled by said director when it becomes evident to him that the terms on which it was issued are being violated. No hog cholera serum shall be sold or offered for sale or use, or may be used in this state which is below the standard test of potency established by the director, except for experimental purposes at the place of manufacture of hog cholera serum and under the direction of manager thereof. No permit

shall be granted a distributing agency for the distribution of hog cholera serum and virus manufactured within the state, and no serum laboratory located without the state shall be granted more than one distributing agency permit within the state, for which distributing agency a permit must be secured from the director of the state laboratory, on the same terms and subject to the same provisions as govern the granting of original permits."

Section 3. That section twenty-five hundred thirty-eight-w 5 (2538-w 5) be and the same is hereby amended by striking out the entire of said section and inserting in lieu thereof the following:

"The director of said laboratory is authorized to procure virulent blood or virus from cholera infected hogs and to distribute the same at approximate cost for use with hog cholera serum and under restrictions concerning payments as established in section three (3) of this act. No person, firm, company or corporation shall distribute or sell any portion of virulent blood or virus from cholera infected hogs except to holders of permits to use the same and shall report in writing to the director of said laboratory and under such regulations as the said director may issue. And no person shall use any portion of virulent blood or virus from cholera infected hogs unless he has received special instructions in reference to such use of such virulent blood or virus which is satisfactory to the director of said laboratory and said director has issued a permit to such person, and such permit shall be cancelled by said director for cause which said director may deem sufficient; provided that these restrictions shall not apply to official work of, first, veterinary members of the animal health commission, or, second, representatives of the United States bureau of animal industry; but all virulent blood or virus used by such persons shall be reported to the director of the serum laboratory in such manner as he may require. Any person, firm, company or corporation violating the terms herein stated shall be punished the same as provided for in section twenty-five hundred thirty-eight-w 8 (2538-w 8) of this act."

House File 279, by Mr. Cochrane, referred to the Committee on Agriculture, amends section 2538-w 5, Supplement to the code, 1913, by striking from said section all that part following the word "used" in the tenth line down to and including the word "require" in the twentieth line, and by substituting in lieu thereof the following:

"And no person shall use any virus from cholera infected hogs except on hogs or herds already infected with hog cholera

except when the same shall be used by the director of said laboratory for laboratory purposes."

Kansas.

Senate Bill 617, by Mr. Mahin, referred to the Committee on Live Stock. Prohibits the sale of all serums for the curing or preventing of hog cholera and other animal diseases unless samples are first submitted to the veterinary department of the Agricultural Department for inspection and approval. Such serums may only be sold when the standard, grade and quality are so approved. Approved serums must have the approval stamped on the label together with the grade, quality and standard.

Senate Bill 130, by Mr. Troutman, referred to the same committee. Provides as follows:

Section 1. That the following sum or so much thereof as may be necessary for the purposes respectively herein named are hereby appropriated out of the funds in the state treasury not otherwise appropriated to be expended by the State Board of Administration: For furnishing and equipping the anti-hog-cholera serum and virus plant now being operated at the Kansas Agricultural College at Manhattan, Kansas, the sum of \$5,000, and all of said sum is hereby made immediately available. For the propagation, production, transportation and distribution of serum and virus for the cure and prevention of hog cholera in the State of Kansas, the sum of \$5,000 for the year ending June 30, 1916, and \$5,000 for the year ending June 30, 1917; provided, that the serum and virus herein provided for shall be furnished to the citizens of Kansas at a price not to exceed the cost of propagating, producing, transporting and distributing the same to such citizens as may apply for the same actual and immediate use in curing of preventing hog cholera.

Section 3. That for the purpose of carrying out the provisions of this act the State Board of Administration is hereby empowered to employ and to pay special agents who shall be experts in the propagation, production and use of anti-hog-cholera serum and virus.

Minnesota.

House Bill 345, by Messrs. Bendixen, etc., referred to the Committee on Dairy Products and Live Stock. Senate Bill 264, by Messrs. Potter, etc., referred to the Committee on Finance. A similar bill.

Section 1. That the sum of Ten Thousand (\$10,000.00)

Dollars, or as much thereof as may be necessary, is hereby appropriated from any moneys in the State Treasury not otherwise appropriated, for the enlargement and equipment of the said hog cholera serum plant of the State of Minnesota at the University Farm, same to be immediately available.

Section 2. That the sum of Twenty Thousand (\$20,000.00) Dollars, or as much thereof as may be necessary, is hereby appropriated, for the purchasing of hog cholera serum, vaccine or other biological products, Ten Thousand (\$10,000.00) Dollars of said sum to be immediately available and Ten Thousand (\$10,000.00) Dollars to be available for the fiscal year ending July 31, 1916.

Section 3. That the serum manufactured at the said plant shall be sold and distributed, as near as may be at actual cost to any citizen who is a resident of this State and who applied for same as herein prescribed by the said state serum plant, and such selling price shall be stated on the package.

Section 4. That surplus serum produced by said hog cholera plant above a reasonable reserve may be sold out of the State at not less than cost of production.

That in case of need said State serum plant shall be authorized to purchase hog cholera serum, vaccine or other biological products which are deemed reliable and may sell the same at approximate cost in the same manner and under the same regulations as prescribed for serum from the hog cholera serum plant of the State of Minnesota.

Provided further that the said State Serum Plant before selling or distributing any such hog cholera serum, vaccine or other biological products shall exercise all due precautions in purchasing from government licensed plants and shall conduct such inspection or tests of said hog cholera serum, vaccine or biological products as may appear reasonably necessary to insure reliable preparation.

Section 5. The Veterinary Division of the State University shall establish in each county of this State, as necessity may demand, one or more distributing centers where such serum, vaccine or other biological products shall be had for sale, and such serum may be determined by any person upon his own hogs, but no person, except licensed veterinarians, shall administer said serum upon the hogs of another unless authorized to do so by the State Live Stock Sanitary Board. Said Department of Agriculture shall provide instructions in the proper method of administering said serum to persons who apply therefor and certify to the State Live Stock Sanitary Board for license, said persons when in the

judgment of such Department they have qualified themselves therefor.

Montana.

House Bill 243, by Mr. Burnett, appropriates money for the purchase of hog cholera serum by the experiment station of the Montana Agricultural College for the purpose of resale. A copy of this bill has not yet been received.

Nebraska.

Senate Bill 93, by Messrs. Bygland and Ruden, referred to the Committee on Agriculture, and House Bill 158, by Mr. Reisner, referred to the Committee on Live Stock and Grazing.

Section 1. The Board of Regents of the University of Nebraska is hereby authorized and directed to establish at the State Farm at Lincoln, Nebraska, in connection with the Nebraska State College of Agriculture and Mechanic Arts, a laboratory for the manufacture of hog cholera serum, toxines, vaccines and biological products and to provide the necessary equipment therefor. The Regents shall appoint the director of said laboratory and such assistants as are deemed necessary to efficiently carry on said work and shall fix the salaries of said assistants.

Section 2. The director of said laboratory shall on application furnish said serum to any person within the State of Nebraska for use in his herd only, together with the specific instructions for the use of same, at the approximate cost of manufacture, and such cost shall be stated on the package. Any surplus serum or other biological products may be sold by said director at a reasonable profit to any applicant outside of the State. The director of the serum laboratory is authorized to purchase serum or other biological products which he deems reliable and he may sell the same at approximate cost in the same manner as products of the laboratory are sold, at any time it appears to him that the available supply will not be sufficient to meet the demand.

Section 4. The director of said laboratory shall have the power and it is made his duty to establish and declare the standard degree of potency of hog cholera serum for successfully treating, curing and controlling hog cholera or swine plague. Any person, firm, company or corporation before selling or offering for sale within this state any hog cholera serum, shall first make application to the director of the laboratory herein created, for permission to sell the same in the state. Said application shall give the name of said person, firm, company or corporation with its place or places of business.

Such other information and samples of serum shall be furnished whenever required by the director. If the director is satisfied that said person, firm, company or corporation is fit, proper and reliable, upon the furnishing of a bond in the sum of one thousand dollars (\$1,000.00) by said applicant, which bond shall be approved by the director, he shall issue to said person, firm, company or corporation a permit to sell said serum within the state for a period of one calendar year or part thereof, for which permit he shall collect the sum of one dollar (\$1.00), which money shall be deposited and handled the same as moneys received for the sale of serum. At the time of issuing said serum, the said director shall deliver to said applicant a statement showing the standard or degree of potency of hog cholera serum as established by said director and said permit may at any time be revoked and cancelled by said director when it becomes evident to him that the terms on which it was issued are being violated. No hog cholera serum shall be sold or offered for sale or kept for sale or use, or be used in this state which is below the standard test of potency established by the director, except for experimental purposes at the place of manufacture of hog cholera serum and under the direction of the manager thereof.

Section 6. The director of said laboratory is authorized to procure virulent blood or virus from cholera infected hogs and to distribute the same at approximate cost for use with hog cholera serum and under restrictions concerning payments as established in section three (3) of this act. No person, firm, company or corporation shall distribute or sell any portion of virulent blood or virus from cholera infected hogs unless permitted in writing so to do by the director of said laboratory and under such regulations as the said director may issue, and such permit shall specify the time and place, and when and where the said virus may be used. And no person shall use any portion of virulent blood or virus from cholera infected hogs unless he has received special instruction in reference to such use of such virulent blood or virus which is satisfactory to the director of said laboratory and said director has issued a permit to such person, and said permit shall be cancelled by said director for cause which said director may deem sufficient; provided, that these restrictions shall not apply to official work of, first, veterinary members of the animal health commission or, second, representatives of the United States Bureau of Animal Industry, but all virulent blood or virus used by such persons shall be reported to the director of the serum laboratory in such a manner as he may require. Any person, firm, company or corporation violating the terms

herein stated shall be punished the same as provided for in section eight (8) of this act.

House Bill 699, by Mr. Riescheck, appropriates \$100,000 to build and operate a state hog cholera serum plant.

Senate Bill 197, by Mr. Wesner, House Bill 459, by Mr. Osterman. Declares it unlawful to sell hog cholera serum unless holding an uncanceled, unexpired U. S. Veterinary license, issued by the U. S. Department of Agriculture, and a permit from the Live Stock Sanitary Board.

Section 4. If the Live Stock Sanitary Board shall be satisfied that said person, firm or corporation, referred to in Section 3, is, fit, proper and reliable, and upon the furnishing by such corporation, firm or person of a bond in the sum of one thousand dollars (\$1,000) to be approved by the Live Stock Sanitary Board, they may issue to said person, firm or corporation a permit to sell serum and virus within the State, for a period of one calendar year, or part thereof, for which permit the Live Stock Sanitary Board shall collect the sum of five dollars (\$5), which money shall be deposited in the State Treasury. At the time of issuing such permit, the Live Stock Sanitary Board shall deliver to said applicant a statement showing the standard degree of potency, to be obtained in anti-hog cholera serum, as established by said Live Stock Sanitary Board, and the terms of said permit may at any time be changed, or said permit may be revoked or cancelled, when it becomes evident to the Live Stock Sanitary Board that conditions necessitate a change in the terms of the permit.

Section 8. Records. All persons, firms, or corporations; offering serum or virus for sale in this State, shall furnish a sufficient number of blank reports, sufficient to report the result of vaccination on all hogs so treated. Provided, also, a statement must be made to the Deputy State Veterinarian at the end of each month, a report of all shipments of serum or virus, giving name and address of each purchaser and date of shipment. Blanks will be furnished by the Live Stock Sanitary Board, upon application. Any person who shall apply anti-hog cholera serum or virus shall keep an accurate record of the temperature of each animal to which such serum or serum and virus is applied and shall mark, in the most convenient manner, all hogs necessary so that at any time within 30 days after vaccination, such person may be able to distinguish all hogs having a temperature higher than 104 degrees at the time of vaccination and be able to distinguish all hogs having a temperature less than 104 degrees at the time of vaccination. A report shall be made at the end of 30

days after vaccination to the Live Stock Sanitary Board, by any person applying said serum or serum and virus, said report to give serial number and the name of manufacturer of serum used and the number of hogs vaccinated, the number of these hogs having temperatures over 104 degrees at the time of vaccination and the number of hogs having temperatures less than 104 degrees at the time of vaccination, and of all hogs dying within 30 days with temperatures over 104 degrees and also of all hogs dying within 30 days with temperatures under 104 degrees, at the time of vaccination. Any person, firm or corporation violating any of the provisions of this section shall be guilty of a misdemeanor and upon conviction thereof, shall be fined in any sum, not less than ten dollars (\$10) and not more than five hundred dollars (\$500).

Section 9. No person, firm or corporation shall sell or offer for sale any anti-hog cholera serum or virus within the State of Nebraska without the license seal of the State of Nebraska, or the Department of Agriculture, or both, together with a scale of dosage and the price of said serum or virus per cubic centimeter. No person, firm or corporation, shall give or accept a rebate or commission on any anti-hog cholera serum or virus that is sold or offered for sale within the State of Nebraska. Any person, firm or corporation, violating any of the provisions of this section shall be guilty of a misdemeanor and, upon conviction thereof, shall be fined in any sum, not less than ten dollars (\$10) and not more than five hundred dollars (\$500).

North Carolina.

House Bill 329, by Mr. Kent, referred to the Committee on Appropriations.

Section 1. The North Carolina Board of Health, under the management of the Director of the State Laboratory of Hygiene, shall manufacture and distribute to the people of the State for a sum not exceeding the actual cost, such of the various anti-toxins, vaccines, and sera for the prevention and cure of diseases as in its judgment may be desirable and practicable.

Section 3. In order to carry out the provisions of this Act, the sum of \$15,000 for building and equipping the necessary plant, and the further sum of \$75,000 annually for the maintenance are hereby appropriated.

Senate Bill 611, by Mr. McNider, an act to regulate and promote the sale of hog cholera virus. A copy has not yet been received.—(*American Association of Pharmaceutical Chemists.*)

VETERINARY MEDICAL ASSOCIATION MEETINGS.

In the accompanying table the data given is reported by many Secretaries as being of great value to their Associations, and it is to be regretted that some neglect to inform us of the dates and places of their meetings.

Secretaries are earnestly requested to see that their organizations are properly included in the following list :

Name of Organization.	Date of Next Meeting.	Place of Meeting.	Name and Address Secretary.
Alabama Veterinary Med. Ass'n.....	Mar. 5-6-7, 1914	Auburn.	C. A. Cary, Auburn.
Alumni Ass'n, N. Y.-A. V. C.....	June 10, 1915.....	141 W. 54th St.	P. K. Nichols, Port Richmond, N. Y.
American V. M. Ass'n.....	Pending.....		Nelsen S. Mayo, 4753 Ravenswood Ave., Chicago, Ill.
Arkansas Veterinary Ass'n.....	1st Week Feb., 1916	Little Rock.....	R. M. Gow, Fayetteville.
Ass'n Médéciale Veterinaire Française. "Laval".....	1st and 3d Thur. of each month.....	Lec. Room, Laval Un'y, Mon.	J. P. A. Houde, Montreal.
B. A. I. Vet. In. A., Chicago.....	2d Fri. each month.....	Chicago.....	H. A. Smith, Chicago, Ill.
B. A. I. Vet. In. A., So. Omaha.....	3d Mon. each month.....	S. Omaha, Neb.	E. J. Jackson, So. Omaha.
Buchanan Co. Vet. Ass'n.....	Monthly.....	St. Joseph.....	F. W. Caldwell, St. Joseph, Mo.
California State V. M. Ass'n.....	December 10, 1913.....	San Francisco.....	John F. McKenna, Fresno.
Central Canada V. Ass'n.....	Feb. and July.....	Ottawa.....	A. E. James, Ottawa.
Central N. Y. Vet. Med. Ass'n.....	June and Nov.....	Syracuse.....	W. B. Switzer, Oswego.
Chicago Veterinary Society.....	2d Tues. each month.....	Chicago.....	D. M. Campbell, Chicago.
Colorado State V. M. Ass'n.....	January, 1914.....	Denver.....	I. E. Newsom, Ft. Collins.
Connecticut V. M. Ass'n.....	Pending.....	New Haven.....	A. T. Gilyard, Waterbury.
Delaware State Vet. Society.....	Jan., Apl., July, Oct.....	Wilmington.....	A. S. Houchin, Newark, Del.
Essex Co. (N. J.) V. M. A.....	3d Mon. each month.....	Newark, N. J.....	J. F. Carey, East Orange, N. J.
Genesee Valley V. M. Ass'n.....	2d week, July, 1913.....	Rochester.....	J. H. Taylor, Henrietta.
Georgia State V. M. A.....	Dec. 22-23, 1913.....	Atlanta.....	P. F. Bahnsen, Americus.
Hamilton Co. (Ohio) V. A.....			Louis P. Cook, Cincinnati.
Illmo Vet. Med. Ass'n.....	Nov. 20, 1914.....	E. St. Louis.....	L. B. Michael, Collinsville, Ill.
Illinois State V. M. Ass'n.....	Dec. 3-4-5, 1914.....	Chicago.....	L. A. Merillat, Chicago.
Indiana Veterinary Association.....	Jan. 14, 1914.....	Indianapolis.....	A. F. Nelson, Indianapolis.
Iowa Veterinary Ass'n.....	Feb. 9-10-11, 1915.....	Cedar Rapids.....	C. H. Stange, Ames.
Kansas State V. M. Ass'n.....	Jan. 5-6, 1915.....	Topeka.....	J. H. Burt, Manhattan.
Kentucky V. M. Ass'n.....	Oct. & Feb. each year.....	Lexington.....	Robert Graham, Lexington.
Keystone V. M. Ass'n.....	2d Tues. each month.....	Philadelphia.....	Cheston M. Hoskins.
Lake Erie V. M. Association.....	Pending.....	Pending.....	Phil. H. Fulstow, Norwalk, Ohio.
Louisiana State V. M. Ass'n.....	Sept., 1914.....	Lake Charles.....	Hamlet Moore, New Orleans, La.
Maine Vet. Med. Ass'n.....	April 14, 1915.....	Waterville.....	H. B. Wescott, Portland.
Maryland State Vet. Society.....		Baltimore.....	H. H. Counselman, Sec'y.
Massachusetts Vet. Ass'n.....	4th Wed. each month.....	Young's, Boston.....	W. T. Pugh, Southbridge.
Michigan State V. M. Ass'n.....	Feb. 2, 3, 1915.....	Jansing.....	W. A. Ewalt, Mt. Clemens.
Minnesota State V. M. Ass'n.....	Jan. 13-14-15, 1915.....	St. Paul.....	G. Ed. Leech, Winona.
Mississippi State V. M. Ass'n.....	1914.....	Vicksburg.....	J. D. Townsend, Louisville.
Missouri Valley V. Ass'n.....	Feb. 2-3-4, 1915.....	Kansas City, Mo.....	Hal. C. Simpson, Denison, Ia.
Mississippi Valley V. M. Ass'n.....	Semi-Annually.....	Galesburg, Ill.....	G. E. McIntyre, Alexis, Ill.
Missouri Vet. Med. Ass'n.....	July, 1915.....	St. Louis.....	Chas. D. Tolse, Kansas City.
Montana State V. M. A.....	Sept. 24, 25, 1913.....	Helena.....	A. D. Knowles, Livingston.
Nat'l Ass'n B. A. I. Employees.....	2d Mon., Aug., 1915.....	New York, N. Y.....	S. J. Walkley, 185 N. W. Ave., Milwaukee, Wis.
Nebraska V. M. Ass'n.....	1st Mo. & Tu., Dec.'13	Lincoln, Neb.....	Carl J. Norden, Nebraska City.
New York S. V. M. Soc'y.....	1915.....	Ithaca.....	H. J. Milks, Ithaca, N. Y.
North Carolina V. M. Ass'n.....	June 23, 1914.....	Wilson.....	J. P. Spoon, Burlington.
North Dakota V. M. Ass'n.....	Week of July 20, 1914.....	Fargo.....	A. F. Schalk, Agricultural College.
North-Western Ohio V. M. A.....	Nov. 1913.....	Delphos.....	E. V. Hover, Delphos.
Ohio State V. M. Ass'n.....	Jan. 13-14, 1916.....	Columbus.....	F. A. Lambert, Columbus.
Ohio Soc. of Comparative Med.....	Annually.....	Upper Sandusky.....	F. F. Sheets, Van Wert, Ohio.
Ohio Valley Vet. Med. Ass'n.....			J. C. Howard, Sullivan.
Oklahoma V. M. Ass'n.....	Fall, 1913.....	Oklahoma City.....	C. E. Steel, Oklahoma City.
Ontario Vet. Ass'n.....	1st Week in Feb. 1914.....	Toronto.....	L. A. Willson, Toronto.
Pennsylvania State V. M. A.....	March 2, 3, 1915.....	Philadelphia.....	John Reichel, Glenolden.
Philippine V. M. A.....	Call of President.....	Manila.....	David C. Kretzer, Manila.
Portland Vet. Med. Ass'n.....	4th Tues. each month.....	Portland, Ore.....	Sam. B. Foster, Portland, Ore.
Province of Quebec V. M. A.....	Mon. and Que.....	Providence.....	Gustave Boyer, Rigaud, P. Q.
Rhode Island V. M. Ass'n.....	Jan. and June.....	Providence.....	J. S. Pollard, Providence.
South Carolina Ass'n of Veter'ns.....	Pending.....	Pending.....	B. K. McInnes, Charleston.
South Illinois V. M. and Surg. Ass'n.....	Aug. 3, 1915.....	Centralia.....	F. Hockman, Iola.
St. Louis Soc. of Vet. Inspectors.....	1st Wed. fol. the 2d Sun. each month.....	St. Louis.....	Wm. T. Conway, St. Louis, Mo.
Schuylkill Valley V. M. A.....	Dec. 16, 1914.....	Reading.....	W. G. Huyett, Wernersville.
Soc. Vet. Alumni Univ. Penn.....		Philadelphia.....	B. T. Woodward, Wash'n, D. C.
South Dakota V. M. A.....	July 1, 2, 1915.....	Rapid City.....	S. W. Allen, Watertown.
Southern Aux. of Cal. S. V. M. Ass'n.....	Jan., Apl., July, Oct.....	Los Angeles.....	J. A. Dell, Los Angeles.
South St. Joseph Ass'n of Vet. Insp.....	4th Tues. each month.....	407 Illinois Ave.....	H. R. Collins, South St. Joseph.
Tennessee Vet. Med. Ass'n.....	November, 1914.....	Nashville.....	O. L. McMahon, Columbia.
Texas V. M. Ass'n.....	Nov., 1913.....	College Station.....	Allen J. Foster, Marshall.
Twin City V. M. Ass'n.....	2d Thu. each month.....	St. P.-Minneapolis.....	M. H. Reynolds, St. Paul, Minn.
Utah Vet. Med. Ass'n.....	Spring of 1914.....	Salt Lake City.....	E. J. Coburn, Brigham City.
Vermont Vet. Med. Ass'n.....			G. T. Stevenson, Burlington.
Veterinary Ass'n of Alberta.....			C. H. H. Sweetapple, For. Saskatchewan, Alta., Can.
Vet. Ass'n Dist. of Columbia.....	3d Wed. each month.....	514 9th St., N.W.....	M. Page Smith, Washington, D. C.
Vet. Med. Ass'n, Geo. Wash. Univ.....	1st Sat. each month.....	Washington, D. C.....	W. M. Cassell, 2115 14th Street.
Vet. Ass'n of Manitoba.....	Feb. & July each yr.....	Winnipeg.....	Wm. Hiltun, Winnipeg.
Vet. Med. Ass'n of N. J.....	July, 1915.....		E. L. Loblein, New Brunswick.
V. M. Ass'n, New York City.....	1st Wed. each month.....	141 W. 54th St.....	R. S. MacKellar, N. Y. City.
Veterinary Practitioners' Club.....	Monthly.....	Jersey City.....	T. F. O'Dea, Union Hill, N. J.
Virginia State V. M. Ass'n.....	July 9-10, 1914.....	Staunton.....	G. O. C. Faviile, North Emporia.
Washington State Col. V. M. A.....	1st & 3d Fri. Eve.....	Pullman.....	R. J. Donohue, Pullman.
Washington State V. M. A.....	June, 1915.....	Yakima.....	Carl Cozier, Bellingham.
Western N. Y. V. M. A.....	June 24, 1914.....	Buffalo.....	W. E. Fritz, 358 Jefferson St., Buffalo
Western Penn. V. M. Ass'n.....	3d Thu. each month.....	Pittsburgh.....	Benjamin Gunner, Sewickley.
Wisconsin Soc. Vet. Grad.....	Feb. 10, 11, 1914.....	Milwaukee.....	W. W. Arzberger, Watertown.
York Co. (Pa.) V. M. A.....	June, Sept., Dec., Mar.....	York.....	E. S. Bausticker, York, Pa.

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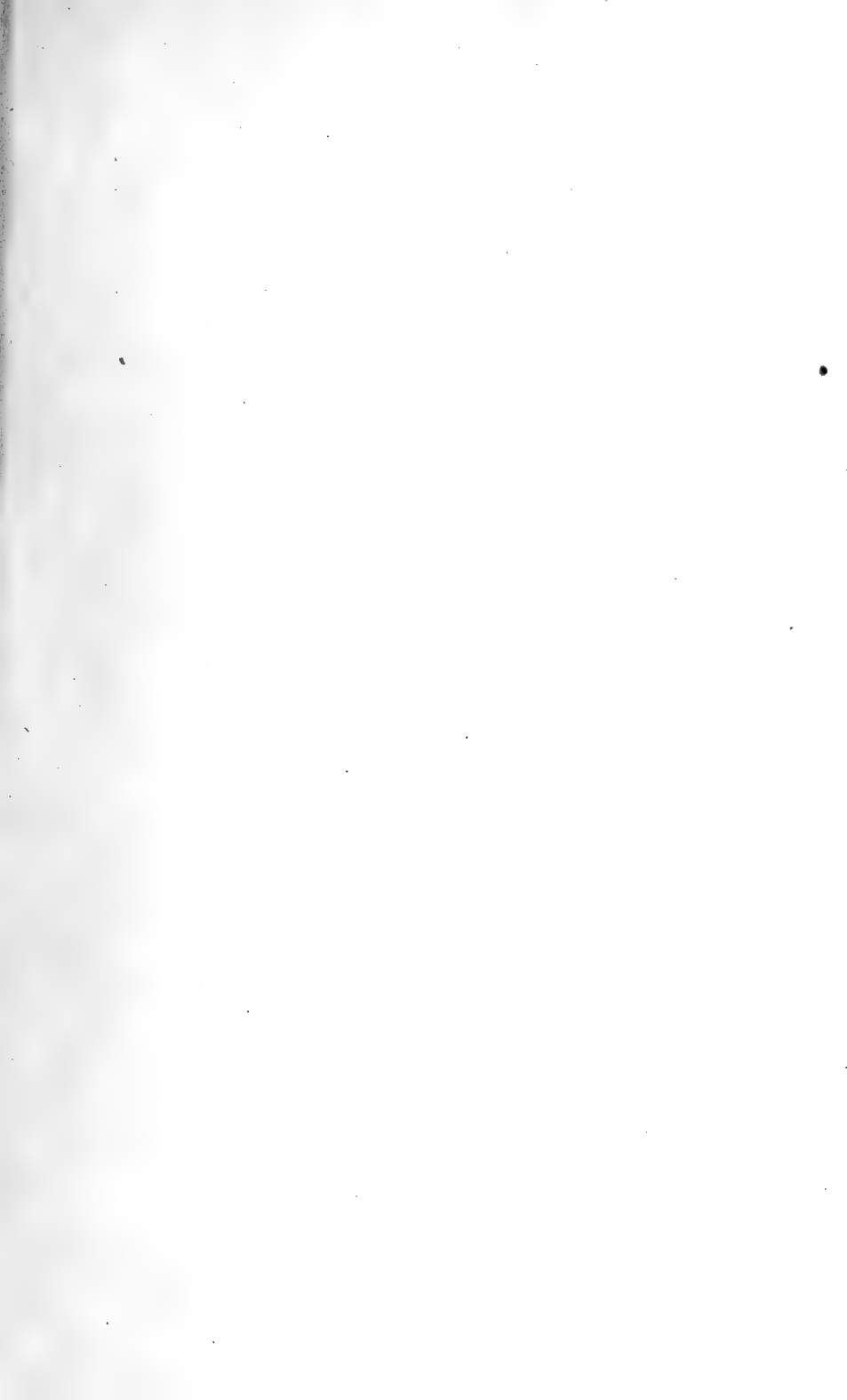
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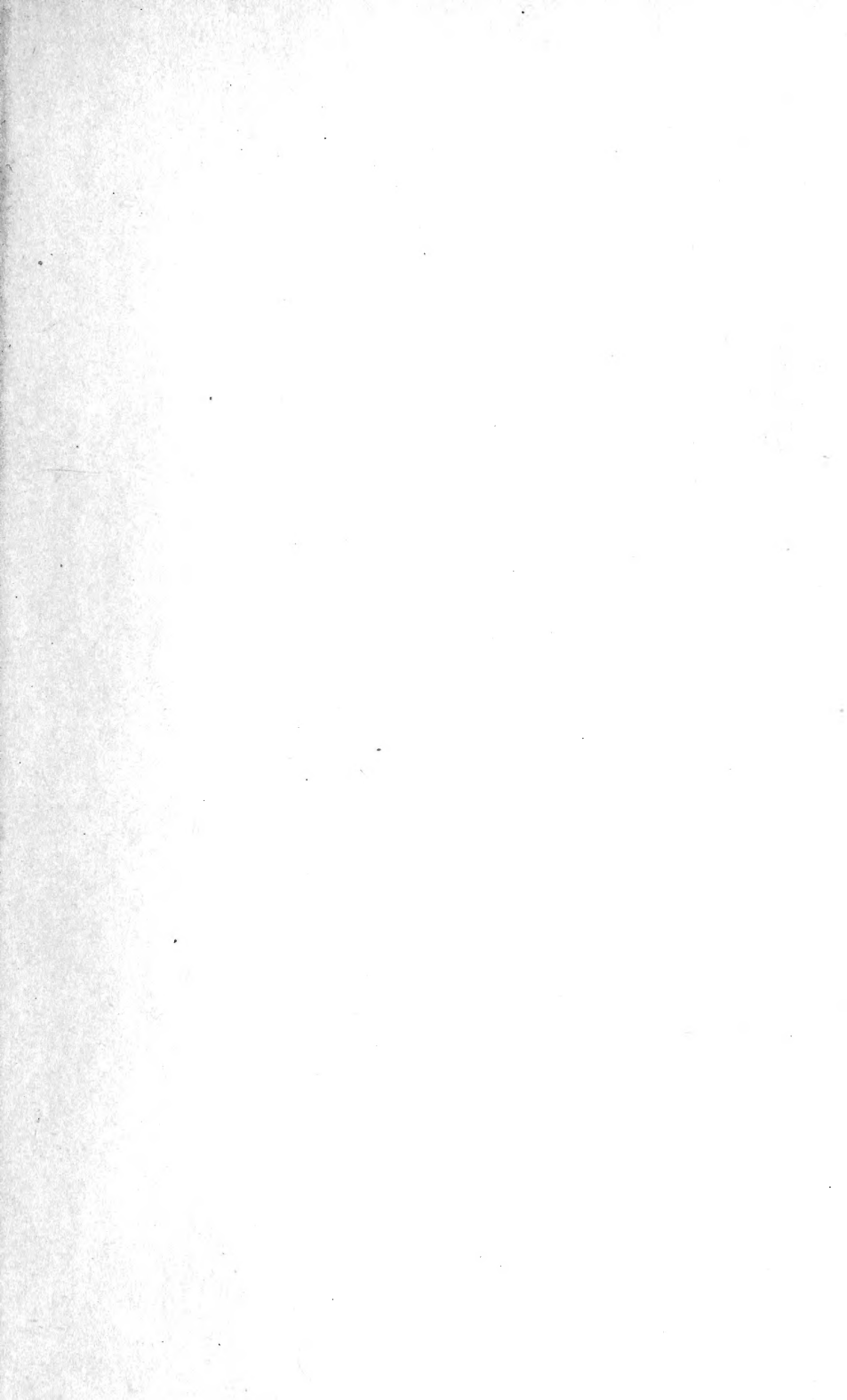
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